THE IRON AGE

THURSDAY, MARCH 22, 1888.

The Improved Yoch Mining Machine.

We present this week engravings of the improved Yoch mining machine, built by the Yoch Mining Machine Company, of Belleville, Ill.

The machine consists essentially of a cast-iron cylinder, N, 24 inches long by 6 inches bore, with a piston travel of 16 inches. The details of construction are very clearly shown in the sectional view, Fig. 2, in which it will be noticed that the front end of the cylinder has a cushion pocket measuring 5½ x 6 inches, and the back end, one of 4½ x 6 inches, two steel check valves being provided to regulate the imprisoned air. In this way the piston head is effectually prevented from striking either front or back cylinder heads. The piston-rod is of steel, 65 inches long. Of this length a section of 30 inches is turned to a diameter of 2¾ inches. The piston head measures 6 inches, and has two packing rings. Of the remaining length of the piston-rod 30 inches run through a steel sleeve, and this section is planed to a thickness of 2¼ inches and width of 4 inches. The rod is guided through the sleeve by two anti-friction steel rollers turning on steel pins and adjusted as shown in our engraving. The upper front end of the sleeve has a planed surface to guide the top of the rod, and a movable plate is bolted to the bottom so as to provide for taking up wear. The remaining 5 inches of the piston-rod serve as a cross-head to hold the picks. These are made of the best pick steel, ¾ inch round, and turned taper to fit the hole in the cross-head. The upper portion of the cylinder end is fitted for the main valve M and the air chest K, compressed air being the working fluid. The valve is made of brass, and has an extreme length of 15 inches, and is driven by a small independent engine, L, cast solid on the main structure. The piston-rod of this engine, as shown, is directly connected with the valve, the engine itself having a 4-inch bore and 1½-inch stroke. The valve travel consequently also is 1½ inches. Besides working the main valve, the rod of the engine L is connected to a malleable iron yoke with side wings standing vertically and planed to fit accurately on the sides of the air chest K. The bearing surfaces in the chest are provided with ports, so as to come in line with ports cored in the side of the receiver B. The side wings of the yoke also are provided with ports to admit and cut off the supply of air at any point of the stroke desired for the most satisfactory working. These particular details it is somewhat difficult to show in an engraving, but we trust that the main idea can be obtained from the longitudinal section which we show. The main and secondary air receivers are marked respectively A and B. From the latter the compressed air is admitted into the chest K by means of the cut-off valve D. From this point the air is governed entirely by the action of the engine L, at the left, which in turn is controlled by the stop valve E, which regulates the flow of

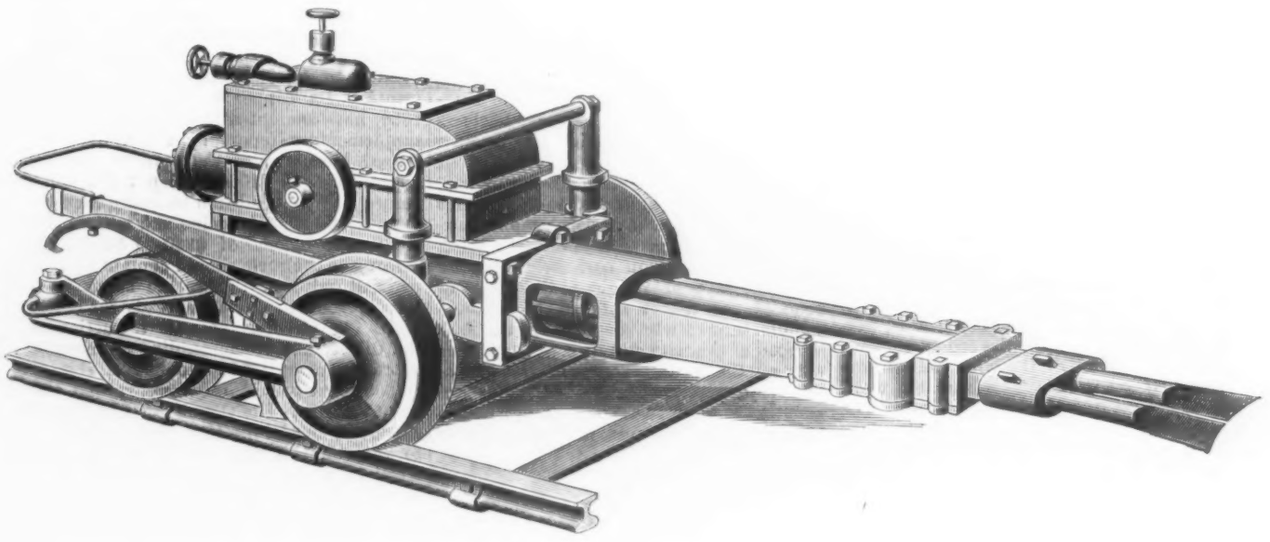


Fig. 1.—General View.

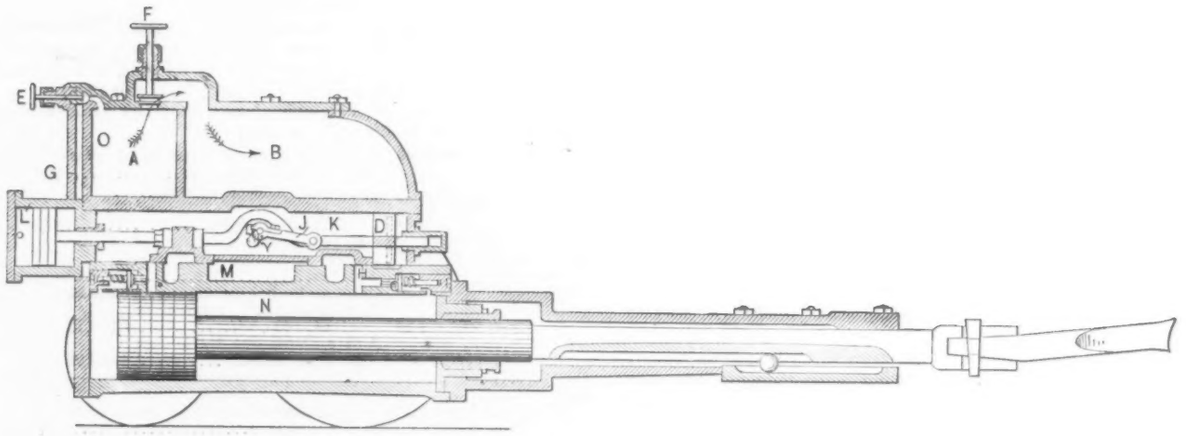


Fig. 2.—Longitudinal Section.

COAL-MINING MACHINE, BUILT BY THE YOCH MINING MACHINE COMPANY, BELLEVILLE, ILL.

Intermittent Grip for Fan Blowers.

Messrs. Potts & Weber, of Lancaster, Pa., are using on their fan blowers, and for a number of other purposes, a simple form of intermittent grip which we illustrate in the annexed engravings. The primary object of the device is to rapidly and easily drive a blower, but it will be readily understood that it is applicable to all purposes where rotary motion is to be obtained from reciprocating motion.

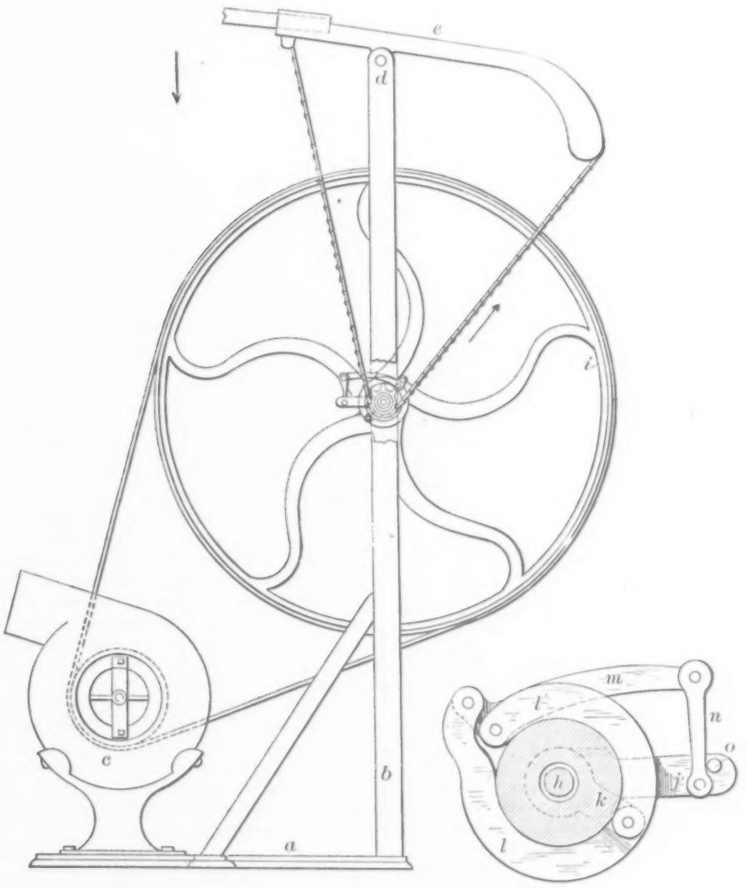


Fig. 1.—Side Elevation of Blower Fitted with Clutch.

Fig. 2.—Side Elevation of Clutch.

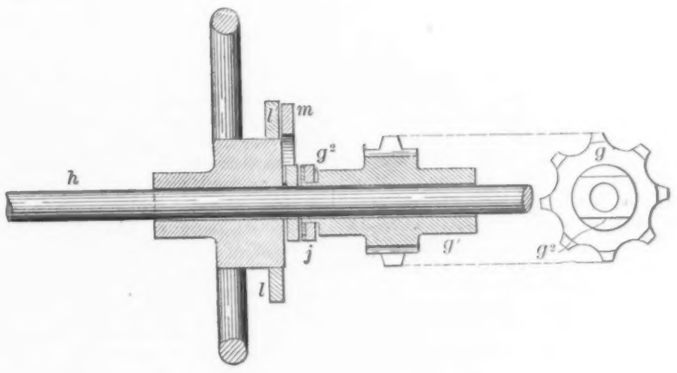


Fig. 3.—Longitudinal Section of Clutch.

INTERMITTENT GRIP FOR FAN BLOWERS.

Fig. 1 is a side elevation of a portable blower fitted with the device, while Figs. 2 and 3 represent an elevation and a longitudinal section of the gripping mechanism. The shaft *h* is a non-rotating rod with bearings in the frame *b*. The pulley *i* rotates freely on this shaft. The sprocket-wheel *g* (Fig. 3) has a sleeve *g'* and also turns loose on the shaft *h*. One end of the sleeve *g'* has a squared projection g^2 fitted with an arm *j* (Fig. 2). An arm *k* is arranged to turn loosely upon the shaft *h*, and this arm serves as a pivot for two segmental fingers *l l*, which are concentric with respect to the hub of the pulley *i*. But the finger *l* has an eccentric projecting crook, which is pivoted to the shorter arm of a bell-crank lever *m;* to the angle of this lever is pivoted the other finger *l'*. These fingers are the equivalent in function of a friction strap. The bell-crank lever *m* is connected by a link *n* with the arm *j*. The arm *j* has a pin or stop *o*, which at certain periods engages and disengages the link *n* for a purpose which will presently appear.

The operation is substantially as follows: When the lever *e* is depressed in the direction of the arrow in Fig. 1 the chain will obviously be moved in the direction of the arrow at the right. This will rotate the sprocket-wheel, and with it the sleeve *g'* and the arm *j*. The depression of the arm *j* effects, through the link *n*, the depression of the lever *m*, and this movement of the lever *m* draws the fingers *l l'* into fractional contact with the hub of the pulley *i*, causing the fingers to firmly grasp this hub. The stop *o* on the arm *j*, bearing against the link *n*, makes a firm connection of the arm with the lever *m* and through it with the fingers *l l'* and thereby causes the link, lever and fingers to rotate with the sprocket-wheel and sleeve. When the motion of the lever *e* is reversed, the arm *j* will be elevated and its stop *o* will leave the link *n*. The latter will be correspondingly elevated, and the lever *m* will be vibrated so as to separate the fingers *l l'*, thus releasing the pulley *i* and allowing it to run free until the motion of the lever is repeated. On the up stroke of the lever, the clutch mechanism entirely releases the band-wheel, and hence, after the wheel is once under way, its continuous rotation in one direction is not interrupted at all by the vibration of the lever *e*, so that the pulley *i* may run for some little while of its own momentum.

In Fig. 1 is shown a continuous band in the shape of a chain to engage the sprocket-wheel; but there are many other equivalent devices for driving machinery in this connection which may be substituted for this chain. It will be readily understood that the clutch mechanism might be advantageously employed as a brake for the belt pulley if desired.

The consolidation of the heating apparatus for large institutions has of late become popular, though it may be seriously questioned whether it is always worth while to do it. *The Locomotive*, in reviewing the subject, concludes that where the buildings are compactly placed and favorably situated, it will generally pay; but that when they are widely separated and the formation of the ground is unfavorable, making it difficult to run pipes and return the water of condensation without a complicated system, it will not generally pay. The expense involved in running large mains underground for 3000 or 4000 feet, and doing it properly, is very great, and the unavoidable loss by condensation in such mains is very apt to more than offset any gain that may result from having the boilers located at one point. Still the particular circumstances governing each individual case will generally have to be taken into consideration in order to determine whether a central plant is advisable or not.

Discussing the subject of copper steam pipes, brought up by the explosion on the British steamer Elbe, the London *Engineer* recently remarked: The question deserves consideration, Why use copper piping at all? It is difficult to see what precise advantage it possesses over good lap-welded steel or iron tubes. It appears, moreover, that a very good pipe might be made of thin steel riveted. Such a pipe could not be caulked steam tight, but might be brazed steam tight, its strength depending mainly on the rivets, while the brazing would be a substitute for caulking. Now that a doubt has been cast on the merits of copper for high-pressure work, it is possible that some ingenious individual will produce something as new and as suitable for its intended purpose as the corrugated flues which rendered high pressures possible at sea.

air from the receiver A to the engine cylinder through the port G. The receiver A itself is supplied through a pipe entering at O. The receiving ports from the air-chest to the main cylinder N are marked H, and the steel check valves previously mentioned, C. The engine L is fitted with a slide valve worked by an eccentric on the main shaft Y, in the usual manner.

The drill piston, we understand, is capable of striking a blow ranging from 1100 to 1300 pounds, according to the pressure of air carried. The whole machine is mounted on a frame, fitted with four wheels, as shown in the general view, and provided with suitable brake arrangements. The machine occupies a space measuring about 7 feet in length, 3 feet 8 inches in width, and 22 inches in hight.

Manufacture of Wire Fence at Joliet, Ill.

The works of the Lambert & Bishop Wire Fence Company, at Joliet, Ill., are now being pushed almost up to their full capacity to meet the demand for their products. The wire mill was started double turn last week, as that was found to be absolutely necessary, after trying the experiment of making the regular day hands work an hour or two overtime, in the belief that a sufficient product could thus be made. The barb-wire factory is operated single turn, although it is, perhaps, a month behind the orders booked. The daily output of the wire mill is now over 100 tons, one day's run last week having been 108 tons, double turn. The barb-wire factory makes about 55 tons daily. A large part of the wire drawn by this company is sold to other manufacturers or reaches consumption as market wire.

With the exception of the warehouses, the buildings used by the Lambert & Bishop Wire Fence Company are all composed of brick, stone and iron. The warehouses are frame. All are one story in hight. They are arranged compactly, yet very conveniently for handling wire in the process of manufacture. The wire rods are delivered either by rail at the door of the mill or by water to a dock on the Illinois and Michigan Canal, but a short distance away. They are first taken into the cleaning, baking and annealing room, which is 50 x 270 feet, where they are prepared for drawing. The annealing ovens are built with their openings considerably above the level of the floor, which is necessary here, as water is encountered a few feet below the surface of the ground, but a traveling steam crane, moving on a railroad passing along the ovens, fills and empties all of them with ease and dispatch. The drawing-room, which is 50 x 200 feet, connects directly with the annealing-room, but runs off at right angles to it. In this room the rods are drawn first from No. 5 down to No. 9, and afterward from No. 9 to either Nos. 12 or 13, as desired, without an intermediate annealing. This is done with all rods, Bessemer as well as basic. The wire is then taken back to the annealing-room again, put through the ovens, and, when not intended to be galvanized, is taken to the barbing-room, which runs parallel with the drawing-room and is 40 feet by 200 feet, containing 65 machines. The galvanizing-room, 60 feet by 100 feet, runs off on the opposite side of the drawing-room. It contains two galvanizing tanks, each capable of handling 14 coils of wire at one time. The method of wiping the coated wire as it emerges from the tank secures absolute smoothness of surface and evenness of coating. This is effected by the pressure of a wiper made of asbestos. Being incombustible, it does not burn when the hot metal comes in contact with it, and yet it is sufficiently elastic not to injure the coating. A room extending alongside the galvanizing-room, 50 feet by 100 feet, is used for a boiler-house, engine-room and machine shop. A sufficient force is employed in this shop to make the necessary repairs and an occasional addition or improvement to the machinery, but usually new work is obtained from outside shops. The other buildings embrace a "dip" house, 28 feet by 40 feet, connecting with the barbing-room, in which painted wire receives its coat, and two warehouses, both empty at present, one of which is 44 feet by 110 feet and the other 32 feet by 70 feet. The office of the company is located in a neat frame building, separated from the works and arranged with a view to comfort and convenience.

The present company were organized in 1882 and began business on November 1st of that year, succeeding the firm of Lambert, Bishop & Co. They are now employing 325 men, including the night force in the wire mill. The officers of the company are very able and energetic business men and have succeeded in building up a large establishment, whose influence is felt throughout the Western barb-wire trade. Their location is highly advantageous for receiving their raw materials, manufacturing and shipping their product, being near the Wilmington coal fields, having the same rates of freight as Chicago and none of the delays suffered by Chicago manufacturers, who depend on the belt railroad of that city and direct connections with all the leading routes of transportation enjoyed by Chicago. They consequently look forward to a prosperous future and a business of much larger growth.

Copper Rumors and Facts.

The Boston newspapers contain many reports and rumors in regard to the copper mines, in which local capital there is so much interested. As bearing on the situation the following annual reports of the Quincy and the Ridge companies are of interest. The annual report of the Quincy company for 1887 shows a product of 6,743,510 pounds of mineral, yielding 83.19 per cent., or 5,609,762 pounds of refined copper, and this result of operations follows:

Sales of copper		$658,382,94
Sales of silver		3,772.12
Total		$652,155.06
Running expenses	$315,246	
Construction, &c	75,586	
Smelting, &c	93,631	
		484,464.19
Mining product		$177,690.87
Other income		10,037.42
Total income		187,728.28
Deduct dividends of $5		200,000.00
Deficiency		$12,271.71
Balance of assets January 1, 1887		548,781.46
Balance January 1, 1888		$536,509.75

It thus appears that the dividends of $200,000 paid in 1887 were not quite earned, the failure, of course, being due te the fire and accident last summer. A dividend of $4 per share, $160,000, was paid February 15, 1888. The average force employed was 447; average number of miners, 142; average wages of miners on contract, per month, $48.40; yield of mineral per fathom of ground broken, 976 pounds; yield of refined copper per fathom of ground broken, 781 pounds; total rock mined, 124,289 tons; total rock hoisted, 96,370 tons; total stamp rock treated, 94,250 tons; yield of rock stamped, mineral, 3.23 per cent. From the beginning the expenditures of the company have been $18,648,-140.46. Its copper product has been 93,853,639 pounds, and its dividends $4,610,000. The assets and liabilities January 1, 1888, were:

Assets.	
Call loans	$275,000
Cash in bank	11,387
Cash at mine	8,234
Copper on hand, but sold	232,539
Accounts receivable	11,552
Total	$538,713
Liabilities.	
Drafs unpaid	$40,377
Dividends unpaid	799
Accounts payable	32,718
Total	$73,895
Balance assets	$464,818
Add supplies, &c	71,691
Balance assets January 1, 1888	$536,509

The Ridge Copper Company issue a report and circular for 1887. The results of the operations of the mine for the year have been published. From the beginning the company have paid $99,784.50 in dividends and levied $219,938.50 in assessments. Its copper sales to January 1, 1888, have amounted to $1,033,339.61. A supplementary report by Superintendent Alfred Means gives the opinion that an expenditure of $1000 will put the company's mill in condition to stamp rock by June 1, and that the mine and mill would yield a net income of $920 to $1560, according as the rock should contain 1½ or 2 per cent. mineral. There are about 5000 tons of rock in the mine ready for hoisting. The circular recounts the action of the directors in recommending an increase of capital from 20,000 to 50,000 shares, 10,000 to remain in the treasury and the rest to be offered to shareholders at $2 per share. A special meeting of stockholders to vote on this proposition is called for April 16, and the alternative is presented of adopting this plan or paying an assessment. The directors say one or the other is "imperatively necessary in order to raise additional capital to equip the mine with more modern, economical and powerful machinery for successful work." The assessment plan is the best for shareholders who can afford to make the payment. The other plan is best for those shareholders who would have to be sold out through inability to respond to the demand.

The annual report of the Allouez Mine for 1887 shows:

Copper sold, 85,640 pounds, at average of 10.38 cents		$8,896.93
Balance of interest account		709.51
Total receipts		$9,606.44
Expenditures:		
Freight and other charges on copper	$368.42	
Office and other expenses	1,230.34	
At mine ($6123.63 less rents received, $415.50)	5,708.13	
Add amount due by lessees, not collectable	4,028.08	
		11,334.97
Excess of expenditure over receipts		$1,728.53

The net assets January 1, 1888, were $48,497.97. The directors say they are of the opinion that the present condition of the copper market, and the prospect of a continuance of fair prices, warrant the resumption of work and the outlay necessary to put the mine and surface plant in good working condition.

Canada has already expended $50,000,-000 on account of canal construction and enlargement, and the scheme giving a 14-foot draft from Lake Superior to tide-water, the Minister of Railways and Canals says, will require $12,000,000 more. The total appropriation on account of canals which Parliament is now asked to grant is $3,127,000. Of this amount $997,000 is wanted to begin the construction of the Sault Ste. Marie Canal, connecting Lakes Superior and Huron, to furnish Canada a national waterway independent of the United States Canal near that point.

Ohio Coal and Iron Ore Production.

We are indebted to T. B. Bancroft, chief inspector of mines, of Ohio, for advance sheets of his thirteenth annual report, from which we quote:

The year ending November 15, 1887, has been an exceptional one in the coal trade of Ohio. The operation of the Interstate Commerce law has proven to be rather beneficial than otherwise to the operators in the matter of freight. The business has been a reasonably profitable one throughout, and, as a consequence, the men have enjoyed steadier work than is usually the case, and the price of mining has been advanced. With the profit to the operator and advanced prices to the miner, a harmonious condition of affairs necessarily ensues, and I have to record but one strike of any length during the year, that upon the Baltimore and Ohio Railroad.

The output of the State is in excess of last year 1,866,497 tons. In this is included the pea coal and slack sold and shipped during the year, and which was not taken into consideration in last year's report of product. This amounts to 1,057,658 tons, which, deducted from the total product of the year, would still leave an increased output on the basis of my last year's report of 808,839 tons. The demand for pea and slack and the shipment of these sizes had assumed such proportions in 1886 that it was deemed advisable to include them in future reports, in order that a full and accurate statement of the tonnage of the State might be made. The output for the year is phenomenal, and, when considered in connection with the introduction of natural gas as a fuel, in 1885, it will be observed that our product has regularly increased since this competitor entered the field against coal. The same may be said of the bituminous product of Western Pennsylvania, which in 1886 increased 3,565,030 tons over that of 1885. This product, in both States, came directly in competition with gas fuel, yet its influence upon the coal trade has not been such as to justify the predictions of most of the prophets that lifted their voices a year ago. The relief came in the shape of new markets in the Northwest, that have taken all Ohio's surplus and are still increasing in their demands; and it is a noticeable fact that the coals of this State are able to hold their own and compete successfully with those of States much nearer these markets. This is conspicuously shown in the large amount of Ohio coal sold on the Chicago market, where it comes in direct competition with the nearer coals of Illinois and Indiana.

During the year Ohio coal has penetrated into Wisconsin, Iowa, Minnesota, Colorado and Dakota. The Columbus and Hocking Coal and Iron Company have erected at Ashland, Wis., at the head of lake navigation, a large and complete dock system, with storage capacity of 100,000 tons, and with the most improved machinery for elevating and transferring coal from vessels to cars. Coal from their Hocking Valley mines is now taken in cars to Toledo, and from there shipped by vessels to Ashland, where it is again loaded into cars and sent on its journey to markets distant hundreds of miles west of that point. This investment would indicate a faith that these new markets will continue to be held by Ohio, and demonstrates that the coal of the State will stand transfer and long haulage. The superior quality of the coals of Ohio over those of her immediate Western neighbors, and her natural advantages which give her lower rates for mining (as adopted by the Interstate convention of operators and miners), are prominent factors in the competition for this trade. That Ohio is outstripping her sister States in these markets is shown by the fact that in 1886 Indiana fell off 25,000 tons, and in 1887 gained but 217,711 tons on her product of 1886, while the increase in Illinois in 1887 was only sufficient to cover her falling off in 1885 and 1886. As against this Ohio has gained in her output in these two years the enormous amount of 2,485,529 tons, and is rapidly advancing to the place of second in coal product of the States of the Union, a position hitherto held by Illinois.

From these facts it would seem that the introduction of natural gas, so far from having had a baneful effect upon the coal trade of the State, has, on the contrary, proved beneficial by forcing our coal product upon localities hitherto undreamed of, and which have proven to be of consumptive capacity beyond expectation. The future outlook for the trade is highly flattering, and the opening of new mines in the State during the year has been in excess, it is believed, of any previous year in its history. The developing of new fields, or the extension of old ones, has also followed the improved condition of trade. The high price of foreign coke for furnace use, and the rise in price of anthracite for domestic purposes, together with the substitution of crushed coke in its place for the now generally adopted base-burner heating stoves, has stimulated inquiry into the feasibility of coking our coals, and considerable progress has been made in this direction.

The table below gives the output of the State from 1872 to 1887, inclusive.

Ohio Coal Production.

Years.	Tons.	Years.	Tons.
1872	5,315,294	1880	7,000,000
1873	4,550,028	1881	8,225,000
1874	3,267,585	1882	9,450,000
1875	4,864,259	1883	8,229,429
1876	3,500,000	1884	7,650,062
1877	5,250,000	1885	7,816,179
1878	5,500,000	1886	8,435,211
1879	6,000,000	1887	10,301,708

Of this 7,901,105 tons were lump, 1,342,945 tons were nut and 1,057,658 tons were pea and slack. The average time made by the mines of the State for the year (computed from the time worked by the commercial mines only) is 228 days, being 22 days more than were made in 1886. The returns show that there were 1142 miners, and 658 outside hands, more employed this year than were last, and that the total number of men engaged in the industry in the State is 22,237, or an increase over 1886 of 1800. The number of new mines opened during the year was 75, while the mines worked out or abandoned were 23, showing an increase of 52 commercial mines in the State, as compared with last year's report.

This product of iron ore in 1887 was in excess of last year by 32,981 tons. Most of this increase is in the Hematite column. The largest increase is in Lawrence County (52,579 tons), while Jackson leads the loss with a decrease of 21,674 tons from her production of 1886. In the following table of output by counties 2268 pounds have been reckoned to the ton.

Ohio Iron Ore in 1887.

Counties.	Blackband.	Hematite.
Columbiana	.....	7,800
Gallia	.....	8,326
Hocking	.....	9,118
Jackson	.....	36,362
Lawrence	.....	147,479
Mahoning	21,630	.....
Perry	.....	27,711
Scioto	.....	14,784
Tuscarawas	61,595	.....
Trumbull	4,740	.....
Vinton	.....	37,930
Totals	87,965	289,500

The total tonnage of iron was therefore 377,465 tons. There were mined, too, in Ohio, 366,476 tons of fire-clay, 619,027 net tons of limestone burned for lime and 478,674 net tons used for fluxing.

Sectional Insulated Air Coverings for Steam Pipes.

The Shields & Brown Company, manufacturers of sectional insulated air coverings for steam, gas and water pipes, have very greatly increased their manufacturing facilities by removing to 240 and 242 Randolph street, from 78 and 80 Lake street, Chicago. In their new location they occupy the second, third and fourth floors of a five-story building, each floor being 30 feet wide by 165 feet deep. The office is located on the second floor, fronting on the street, and it has been very neatly finished in hard wood and presents a very attractive appearance. The remainder of this floor is used for the manufacture of coverings for fittings and of hair felt sectional coverings. The third floor is used for a stock room, and is furnished with racks in which a very large quantity of made-up goods can be kept on hand properly assorted. The fourth floor is used for keeping quantities of raw material, such as rolls of felt and asbestos sheathing, and here are located the machines for manufacturing the plain or cylindrical coverings. The machinery used throughout the whole establishment is of special design, constructed to suit the peculiar requirements of the business carried on by the company, and much of it displays great mechanical ingenuity. The coverings manufactured by this company, except irregular shapes, are not composed of layers pasted together, but the several layers are completely separate from one another, except at the place which is intended to be cut to slip over the pipe. The layers are held firmly together in this way, but at the same time there is sufficient looseness to permit the circulation of air to some extent and thus increase the non-conducting character of the covering. The covering when kept in stock is in solid cylinders, which are not cut until they are actually needed to be put on a pipe, thus better preserving their cylindrical form. The building is equipped with a steam elevator, is heated by steam, and suitable steam drying closets are arranged on two of the floors for drying the coverings after they have been properly shaped. When the coverings for fittings and couplings are of peculiar shape they have to be formed in dies; in such cases the layers are pasted together, pressed into shape under a powerful press and are then dried, after which they keep their shape perfectly. The trucks which are used in this establishment are of original design, the frames being made of wrought iron tubing entirely, so that they can be run into the drying chambers loaded with coverings and permitted to remain there without injury.

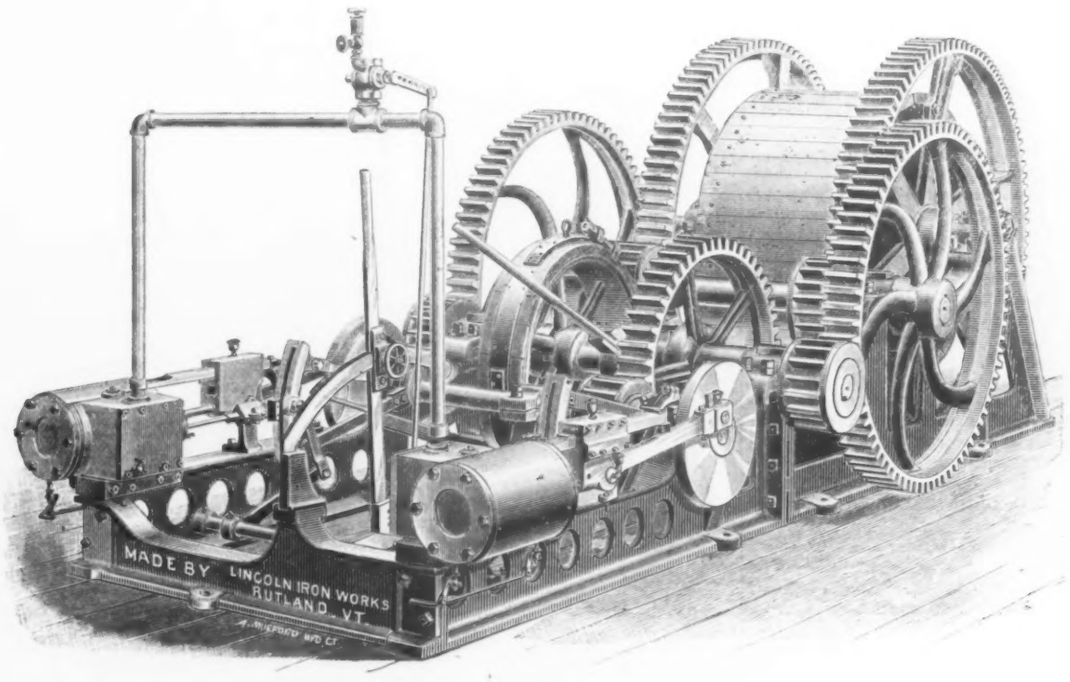
The company make special coverings for pipes of any character desired and of any size, having all the facilities needed for contracts of this character. They are now making a great deal of covering for railroad cars to be used for steam heating, now being introduced so extensively. This is a branch of trade just opening, and promises in time a very extensive field for manufacturers of pipe coverings. The company have recently introduced a hair felt sectional covering to meet the demand for a cheap covering, easily applied yet neat and finished in appearance. They are meeting with quite a demand for it, especially for low-pressure steam pipes. It consists, first, of a layer of asbestos sheathing, then one inch of hair felt, then a sheet of rosin sized paper, and one thickness of painted canvas. On the outside no paint is needed, as the painted canvas presents a neat and finished surface. The Shields & Brown Company have the right to sell and apply H. W. Johns's patent asbestos coverings.

Improved Hoisting Engine.

The Lincoln Iron Works, of Rutland, Vt., are turning out an improved form of hoisting engine, specially designed for use in the marble quarries of that section of the country.

In the past, when the greatest lift in the quarries was from 20 to 30, the old style hoisting powers for raising the stone, and which had a maximum speed of 12 feet per minute, would answer, but of late years, when some of the openings have been carried to a depth of over 200 feet, the time consumed in raising blocks has become an important factor in the economical carrying on of the stone business. In designing a power which would be capable of raising three blocks at a much greater speed several important points had to be borne in mind. The engine must be so constructed that a heavy load could be started slowly so as to bring no sudden strains on the derrick proper or its fastenings, then when the load was entirely supported on the derrick the speed could be increased to its maximum. Another point was to make a power sufficiently strong to withstand safely the sudden strains brought on it when dragging the block over the quarry bottom, this has to be resorted to when the opening is of such an extent that the radius of the derrick or derricks will not cover the entire bottom of the opening. As some of the openings are of such great depth it became necessary to use a single rope for the lift, since a three or five parted "fall" would take much more drum room; besides the hook with its attendant sheaves and ropes would be too heavy to carry over the quarry bottom when dragging blocks out of reach of the perpendicular lift of the derrick.

The machine illustrated is double geared, and is drawn by two engines with link motion, cylinders 7½ inches in diameter and of 10 inch stroke. The lever moving the links is also connected to the throttle valve. The engines are connected to a steel crank shaft on which is a pinion gearing into the gear on the second shaft. This shaft is double geared, as is the drum shaft. The gears on the drum shaft are 5 feet 6 inches in diameter, have 5 inch faces and 2½ inch pitch. The drum is 4 feet in diameter and is a heavy casting lagged with wood. The machine will raise a load of 25 tons at a speed of 36 feet per minute, and smaller loads at a still greater speed. In lowering, a clutch on the second shaft is disengaged, allowing the shaft to revolve in the gear, so that the engines need not be used for the purpose. A powerful band brake controls the load when thus suspended; this brake is operated by a foot lever. The rope used is of steel, 1⅛ inches in diameter, and the sheaves over which it passes are 4 feet in diameter, this and the large drum insuring durability of the rope. The machine, at present, is made in but one size, but the builders are now experimenting on a machine to raise the same load at a speed of from 50 to 60 feet per minute.



IMPROVED HOISTING ENGINE, BUILT BY THE LINCOLN IRON WORKS, RUTLAND, VT.

Requirements for a Magazine Gun.

From a serial article on "Rapid Firing Arms," by Lieut. W. W. Kimball, U. S. N., now appearing in *Engineering*, we quote as follows:

Authoritative military opinions are so diverse upon the matter of the requirements for a magazine arm that it is difficult to formulate them; but after collecting expressions of competent opinion, and after some experience with a number of magazine arms both on the testing ground and in service, the writer finds that the following are some of the more valuable desiderata:

1. The piece, as a single-loader, should be as light, as strong, as well balanced, and of as great ballistic power as the best single-loader, pure and simple.

2. The breech closure should be such that it can be conveniently operated, and the magazine fire delivered without bringing the piece down from the shoulder between shots; such that it can be readily worked by a man standing, kneeling, lying prone, or using his piece over any kind of cover.

3. The magazine attached to the piece should have such form and position that it will not make the arm awkward for use with the bayonet fixed, and that its center of gravity, when charged, will lie between the shoulder and rest-hand, and be incapable of movement, as the cartridges are removed, in any direction but one perpendicular to the bore.

4. The magazine system should be such that the arm can at any time be as quickly charged for magazine fire as loaded for a single shot.

5. Cartridges in the magazine attached to the piece or stowed in any particular way to facilitate the renewal of magazine fire, should be as secure from accidental explosion as any other cartridges carried upon the person, and should not unduly hamper transportation or interfere with kneeling or lying positions.

6. The capacity of the charged magazines should be such that, with the utmost rapidity of delivery, the shooting would entirely cover the time interval between the pauses necessary for the control of fire.

7. The act of preparing the piece for magazine fire, and its appearance after being so prepared, should provide visual evidence of readiness to the group, leaders and company officers, who are charged with the maintenance of fire discipline.

8. The magazine should automatically and unmistakably indicate when it was exhausted.

Perhaps no single arm has all these qualities; but a number, of which the "Lee" is the prototype, have nearly all.

The Contractors' Association has served an injunction on the Aqueduct Commissioners restraining them from awarding the $1,000,000 pipe contract on account of alleged irregularity.

The Building Superintendent in this city says that the roofs and galleries of theaters should be made of iron, and recommends an amendment of the existing law which shall make this requirement peremptory.

The Cyclone Oil Burner.

Messrs. L. Schutte & Co., of Philadelphia, Pa., are putting on the market a new form of burner for petroleum or other liquid fuel for which it is claimed that no difficulties through choking need occur and that positive regulation can be secured. The section of the burner, shown in Fig. 2 of the engravings on this page, fully explains the construction adopted.

The atomizing is effected by passing the oil under pressure through a tube containing a screw blade so that the discharge from the nozzle is gyratory. Through this action, centrifugal force comes into play, and the oil issues in the form of a spray cone of such infinitesimal small drops as to resemble vapor. Surrounding the oil tube is an annular passage, which also contains a screw blade, so that the air, which is drawn or forced through, likewise takes a gyratory motion, and it, like the oil, maintaining this motion on issuing and mixing with the oil, forms into a spreading cone. While this gyratory motion of the air retards forward movement, its speed is maintained, the flame is held close to the burner and the volume of the flame increases rapidly. The gyratory nature of the oil spray, of the blast and of the flame led the makers to call the apparatus the cyclone oil burner. The attachment for the oil is marked A in the engraving; B represents air inlet (open or for pressure supply); C is the discharge nozzle for the oil, containing a screw blade; D is the discharge end, and E is a slide which controls an auxiliary inlet through which additional air is induced by the action from the central air and oil discharge. To provide against a stoppage by dirt, each burner is fitted in the end of the oil tube with a strainer, F. After taking off the cap G, the strainer F can also be cleaned out, or the whole tube can be readily removed, and also the spray nozzle C examined, by unscrewing and taking apart.

The oil supply to burner must be under pressure of not less than 35 pounds. The most convenient supply is thus obtained by a small steam pump which, by an automatic attachment to the steam valve, allows the pressure to be controlled at will between certain limits, while the oil comes to the pump under pressure or suction from a tank car or from a permanent tank above or below ground, and located near or at a distance, as most convenient. The oil supply under pressure can also be obtained by using closed tanks and admitting water pressure from back of boiler or from some other source to the bottom of the tank or air pressure on top. This mode of bringing the oil under pressure requires, however, alternate emptying and filling of the tank, involving more or less trouble and complication of machinery to make it automatic. Messrs. Schutte & Co. therefore recommend a steam pump as more convenient, and as the same need be of but small capacity its cost is trifling.

Fig. 1 represents a diagram of a plant fitted with all the necessary attachments. For the purpose of starting the burner before steam is at disposal the steam pump can be fitted with a hand-power attachment, but a separate small steam boiler, or an accumulator, containing a sufficient quantity of oil under pressure, will always be a desirable part of a large oil-burner plant. The regulation of the burner—viz., the quantity of oil discharge, is had through difference in pressure. Thus, while the pump is set to discharge under a permanent pressure of 150 pounds, the oil inlet to each burner can be so throttled that the discharge from the burner is under 35 pounds only, thereby reducing the quantity to less than one-half of what it would be if discharging under 150 pounds. The throttling is done by a small valve in the oil branch pipe to each burner. The burner can be used with blast or without blast. Generally, it will not be found necessary, and may even not be desirable to have blast, but where it is required, the pressure need be but low, say from 1 to 3 ounces. A steam jet blower or an ordinary fan blower will furnish blast of suitable pressure, while the connecting pipe should be fitted with a gate for the regulation, if there be an excess of pressure. The quantity of the blast is not intended as a supply for combustion. It need be but sufficient for ignition. In connection with Fig. 1 the following references will prove convenient: A, burners; B, blower; C, blast gates; D, drip-pipes; E, blast-pipes; F, blower elbow; G, oil suction; H, Steam valves; I, oil supply; L, oil valves; M, steam-pipe; N, oil pressure; P, steam pump; R, pressure regulator; S, duplex strainer; T, strainer tank; V, regulating valves.

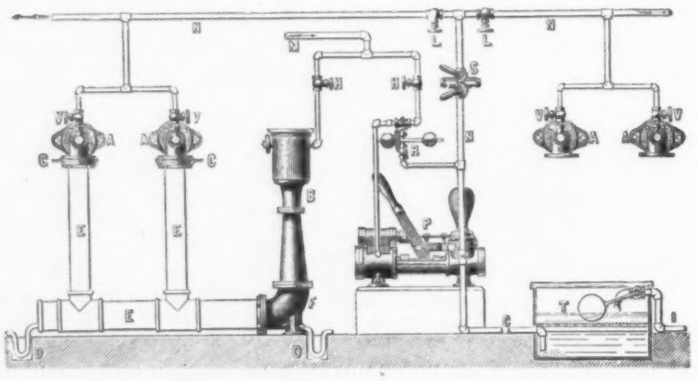


Fig. 1.—Diagram of Oil Burner Plant, with Attachments.

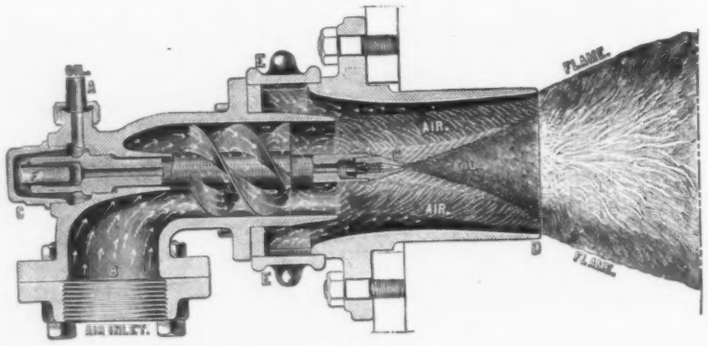


Fig. 2.—Longitudinal Section of Burner.

OIL BURNER, MADE BY L. SCHUTTE & CO., PHILADELPHIA, PA.

In our issue of last week we made mention of the fact that a reduction of 25 cents per ton had been made in the price of coke. Since that time a further reduction of 25 cents per ton has followed. Contrary to general custom, the last reduction was not made by the members of the old syndicate and then agreed to by the small operators, but was announced by the members of the Producers' Association, and, as a matter of course, the large operators have been compelled to meet the cut. All efforts to form a syndicate have been abandoned, and every operator is in the market to sell his coke at the best price he can get. Unless all signs fail, it will be only a short time till coke is selling below the dollar line. The shipments at present amount to about 700 cars per week, of which about three-fourths is sent to Pittsburgh and the West, and the balance to the East. An improvement in the demand is looked for in the near future, as two or three large rail mills at Chicago will soon resume operations according to reports. It is also expected that the seven idle furnaces of Carnegie Bros. & Co., Limited, at Braddock, will soon resume operations, and, of course, will require a large amount of coke. At a meeting of the freight agents of the various railroads, held in Pittsburgh on Weduesday, the 15th inst., the rates on coke were reduced about 5 per cent., as follows: From the Connellsville region to Pittsburgh, from 88 to 84 cents per ton; Mahoning and Shenango Valleys, $1.65 to $1.57 per ton; Cleveland, $2.20 to $2.10; Chicago, $3.30 to $3.15. The rates to the other principal points are as follows: East St. Louis, $3.67; Detroit, $3; Toledo, $2.90; Buffalo, $2.60; Grand Rapids, $3.15; Beaver Falls, $1.44; Carondolet, $3.82; Cincinnati, 3.05; Indianapolis, $3.15; Dayton, $2.85; Springfield, $2.85, and Columbus, $2.10.

On the 24th of February the members of the Southern Railway and Steamship Association discussed pig iron freights from Birmingham to St. Louis, the rate in question having been reduced to $3.60 by the new Kansas City, Memphis and Birmingham Railroad, which is not a member of the association. Until then the differential from Birmingham to St. Louis was 50 cents above the rate from Birmingham to Cincinnati. It was finally decided to reduce the differential to 25 cents per ton. The new rate sheet issued on the 14th, to go into effect on the 16th, fixes the rate on the basis of $3.25 from Birmingham and $2.75 from Chattanooga to Cincinnati, the rate from both points to St. Louis, East St. Louis and Belleville being made $3.50.

New Ten Horse-Power Steam Engine.

The engravings on this page show, in elevation and sectional plan, a compact and well-designed little engine recently built by Messrs. L. Schutte & Co., of Philadelphia, Pa., and now being put on the market by Amos Aller, 109 Liberty street, New York. The engravings leave little to be said in the way of description, clearly illustrating the main features.

The engine, which is rated at 10 horse-power, is of the back-acting type, thus economizing space to a marked degree, and the connecting-rods at each side are made up, as shown, of the rods A A. The cross-head B runs in overhanging guides. The valve is a plain slide, as the section shows, with convenient means of adjustment, and regulation is effected by a throttling governor. The exhaust pipe runs down inside of the frame C and passes through the floor. The cylinder measures 6 x 6 inches and the speed is 250 revolutions. The fly-wheel is 24 inches in diameter and the whole floor space occupied exceeds the area of the base, 36 x 13¼ inches, only by the slight overhang of the fly-wheel.

Compactness and solidity are striking features of the design and should contribute largely to make the engine desirable for a wide variety of work.

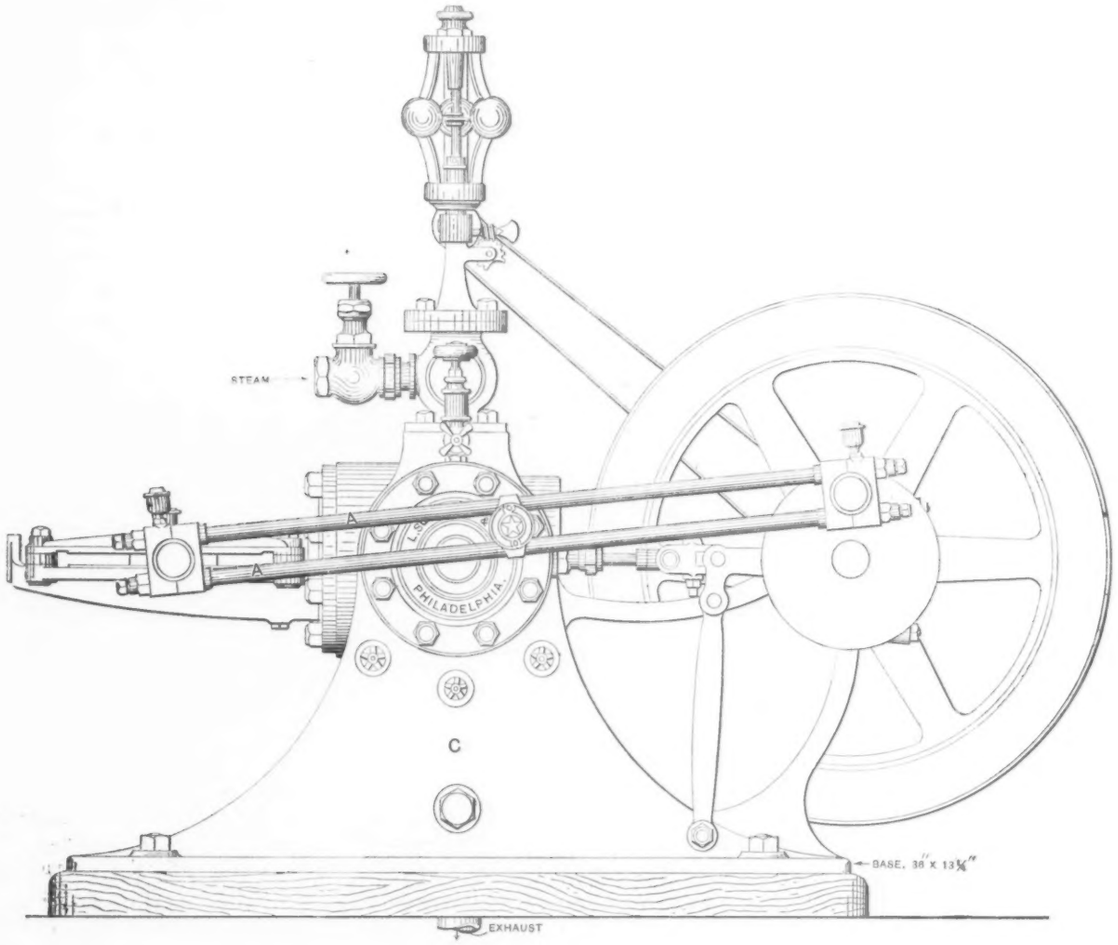


Fig. 1.—Side Elevation.

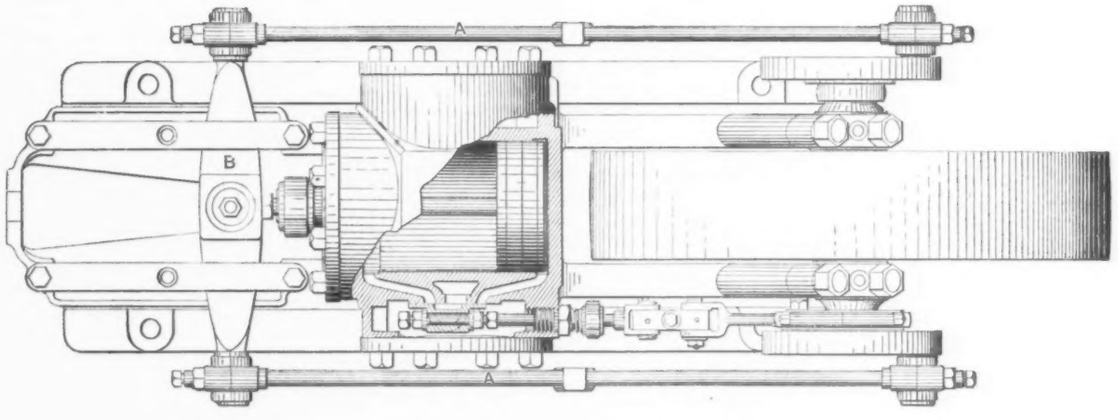


Fig. 2.—Plan and Section.

TEN HORSE-POWER ENGINE, BUILT BY MESSRS. L. SCHUTTE & CO., PHILADELPHIA, PA.

A number of prominent business men at Bellaire, Ohio, are dissatisfied with the heavy charges of the natural gas companies supplying that section and are organizing an opposition company.

MANUFACTURING.

Iron and Steel.

Henry H. King, of Pittsburgh, has been appointed receiver of the Graffton Iron Company, of Leetonia, Ohio, and advertises the two blast furnaces of the company as being for lease. The furnaces have a capacity of about 140 tons a day. The failure of the above company was caused by the recent assignment of Graff, Bennett & Co., of Pittsburgh, who are the largest stockholders of the Graffton concern.

The Pittsburgh Tube Works, at Pittsburgh, have been closed down for an indefinite period. The extreme dullness and low prices now existing for goods of this class is the reason given for the shutdown.

The Carnegie, Phipps & Co. Twenty-ninth Street Union Mill Sick and Accidental Society has been started at Pittsburgh with over 300 members. The monthly dues are 50 cents. The money for each member is drawn from his amount in the office. In case of sickness or accident to a member he gets $5 a week for six months, and if at the end of that time he is disabled for life, each member then gives $1, with no further claims to the society. In case of the death of a member, if he leaves a family, the same amount is given to them. The constitution has just been framed.

The condition of the manufacturing industries at Belleville, Ill., is described in the *Age of Steel* as follows: "Belleville industries are well engaged on orders and new business. The city stove works are filled to the limit of their capacity. The Rogers Foundry turned over to them their orders for stoves about a month ago, when the latter took its heavy contract for cable yoke castings for Kansas City. The Rogers establishment is now turning out 120 yokes a day, with a loss of not over 1¼ per cent. in castings. The Harrison Machine Works are just entering their busy season, and are getting ready to make a great many threshers. The Eagle Foundry Company, general castings, report plenty of work. The Belleville Nail Works are running regularly, turning out nails and light steel rails. The Western Nail Works are expected to start up soon under the management of Gen. Powell, and will roll steel nail plate from old steel rails."

P. L. Kimberly & Co., proprietors of the Atlantic Iron and Nail Works, at Sharon, and the Greenville Rolling Mill, at Greenville, Pa., have closed down both establishments for an indefinite period. About 800 men were employed at the plants. The action of the firm in shutting down their works has caused rumors to be published that they were financially embarassed. This is denied by the firm, who state that the reason of the shut-down is the great depression existing in the iron business. In the Sharon *Herald* of the 16th inst. we find the following in regard to the matter: "The extensive iron works of P. L. Kimberly & Co., here and at Greenville, closed down on Wednesday evening on account of the unsatisfactory condition of the iron market, and will probably remain closed until the market improves so that they can be run again without loss. No more 'orders' will be issued, but all those outstanding will be redeemed, as heretofore. The current talk yesterday about an assignment going to be made, a receiver appointed, &c., had no foundation in fact."

It is now more than three months since the Edgar Thomson Steel Works and blast furnaces of Carnegie Bros. & Co., Limited, at Braddock, Pa., were closed down, and, as yet, there are no signs of a resumption of work taking place. Four of the seven idle furnaces are banked—namely, C, E, F and G, while furnaces A, B and D are out for repairs. It was reported in Pittsburgh last week that another scale of wages would be presented to the workmen some time during this week which would be satisfactory to both workmen and proprietors, and that if accepted operations would be resumed at once. The officials of the firm refused to either deny or affirm this report. At all events, it is expected that some decided action looking to a resumption of work will be taken in a few days.

The employees of the Iron City Bridge Works, at Pittsburgh, have requested an advance of 10 per cent. in wages. The request is under consideration by the firm.

In our issue of last week we noticed the fact that the blast furnace operators of the Mahoning Valley, Ohio, had notified their employees that a reduction of 10 per cent. in wages would be made, to take effect on the 25th inst. It is expected that the proposed reduction will be met with considerable resistance by the men, as they claim that they are already working for 10 per cent. less than the men in the Shenango Valley, only about 30 miles distant. This is borne out by the following statement, which shows the rates of wages paid in both districts:

	Mahoning Valley.	*New Castle.*
Top filler	$1 80	$2.05
Helper	1.65	1.90
Bottom fillers	1.65	1.90
Keepers, average	1.85	2.25
Hot-blast man	1.65	1.90
Laborers	1.30	1.45
Total	$9.90	$11.45

From the above it will be seen that the difference in favor of the men employed in the Shenango Valley is about 10 per cent.

The establishment of an iron bridge works, at Sharon, Pa., in the near future is among the possibilities. Paul Didier, an experienced bridge builder and architect from Pittsburgh, was in that place a few days ago for the purpose of consulting with some of the capitalists and manufacturers regarding the matter. A capital stock of $50,000 would be required to erect and operate such a plant as is contemplated. Another meeting will be held in a short time, when it is expected that some decisive action will be taken relating to the matter.

Three barges of nails, bar and pig iron were started from Ironton, Ohio, last June, and reached St. Louis week before last. Low water and the ice were the causes of delay.

The beam mill department of the Homestead Steel Works, of Carnegie, Phipps & Co., Limited, at Homestead, Pa., closed down on Saturday, the 17th inst., owing to lack of orders. About 200 men were thrown out of employment.

The employees of the Fairchance Furnace Company, of Fairchance, Fayette County, Pa., have accepted a 10 per cent. reduction in wages.

Executions were issued on Saturday, the 17th inst., against Graff, Bennett & Co., of Pittsburgh, who recently made an assignment, by Macintosh, Hemphill & Co., for $335.15, and by Chess, Cook & Co. for $14,927.75. The Pittsburgh and Lake Erie Railroad Company have also entered suit against the same firm on a promissory note for $5592.30.

No. 3 furnace, of the Pennsylvania Steel Company, at Steelton, Pa., which has been banked for more than two months, was put in blast last week.

The mill of P. L. Kimberly & Co., of Sharon, has closed down indefinitely.

No. 5 furnace, of the Allentown Iron Company, at Allentown, Pa., chilled on the morning of the 13th inst., and was blown out. This is the only furnace of the above company that has been in operation for some time, and its chilling makes the entire plant idle.

No. 3 furnace, of the Thomas Iron Company, at Hokendaqua, Pa., was blown in on Tuesday, the 13th inst.

The new reversing engine in Carnegie's old plate mill at Thirty-third street has been tested lately, and proved satisfactory. The mill has been off six weeks on account of the building of the engine.

A charter has been filed in Pittsburgh, authorizing the organization and operation of the Allegheny Bessemer Steel Company for 999 years. The capital stock is $700,000, divided into 7000 shares of $100 each, held as follows: Edward L. Clark, 5365; William G. Park, 218; D. E. Park, 218; Richard C. Gray, 218; Horace P. Smith, 109; R. B. Brown, 429; George Boulton, 443. Mr. Clark's subscripton for 4820 shares of the block held by him is represented by the plant of the Duquesne Steel Works, and the 45 acres of land in Mifflin township upon which it is situated.

There is some talk of the erection of a steel tire mill at Grapeville, near Pittsburgh, James Chambers, Sellers Metler and W. B. Brickell, of Pittsburgh, and Marion Smith, of Philadelphia, being interested in the project.

The Dunbar Furnace Company have announced a reduction of 6¼ per cent. in the wages of the men employed at their coke ovens.

The Sagendorph Iron Roofing and Corrugating Company, of Cincinnati, made an assignment to Harlan P. Lloyd. The assets are stated at $40,000 and liabilities at $35,000. It is expected that the company will make satisfactory arrangements with the creditors and resume business.

The annual report of the Colorado Coal and Iron Company for the year ending December 31 shows:

	1887.	1886.	Increase.
Gross earnings	$2,822,529	$1,926,099	$896,429
Op. exp., including taxes	2,270,295	1,583,838	686,456
Net earnings	$552,234	$342,261	$209,979
Interest	209,940	209,940	.....
Surplus	$342,294	$132,321	$209,972

The royalties earned were $96,018; sales of real estate amounted to $26,610. The total output of coal from the company's mines was 757,419 tons; coke manufactured at company's ovens, 150,697 tons. Net earnings from coal and coke for the year 1887, $323,531, an increase of $38,131. The product of the steel works for the year was 16,565 gross tons of rails. Net earnings of iron and steel, $209,410, an increase of $173,670. Colorado Coal and Iron Company bonds, belonging to the sinking fund and in trustee's hands, represent $79,000, an increase of $25,000 during the year. The general balance sheet shows cash on hand of $30,852, and a surplus of $504,309 in the profit and loss account.

The Laclede Plate Mill Company, St. Louis, Mo., have 16 puddling furnaces and a scrap and slab furnace operating. They had been operating two plate-mill furnaces, but closed one on account of a falling off in orders.

No. 3 Furnace of the Chestnut Hill Iron Ore Company, at Columbia, Pa., was blown out on the 17th. inst. No. 2 is still banked, and the company do not contemplate blowing in or starting up until there is a better outlook in the iron trade, and until fuel and freights can be obtained at lower figures than at present.

Machinery.

A charter was issued on the 12th inst. to the National Wrapping Machine Company, of Pittsburgh, the object of which

is the creating, purchasing, holding and selling of patent rights for inventions and designs for machinery and appliances for wrapping and packing articles, and to issue licenses for the same. John G. Hathaway, of Boston, holds 1950 shares; Thomas L. Shields, of Allegheny City, 275, and Walter F. Jarboe, of Allegheny; David D. Warden, William W. Wilson, Olive S. Richardson and John C. Wilson, of Pittsburgh, each five shares. The directors are Messrs. Hathaway, Jarboe and Warden. The company will work under patents issued to Jarboe and John H. Wilson, with a capital of $300,000.

The George F. Blake Mfg. Company and Copeland & Bacon, manufacturers of machinery, were burned out by the destruction of the five-story iron buildings on Arch street, Philadelphia.

William Tod & Co., of Youngstown, Ohio, are making the rod reels for the new rod mill of the Joliet Steel Company. They also have an order from the Crescent Steel Works for an 18-inch hydraulic accumulator of a new and very compact pattern. They have recently furnished six of their Porter-Hamilton engines to the Carnegie Steel Mills, and are building a 450 horse-power for the Straight Fibre Iron Company, of Chicago.

The Jeffrey Mfg. Company, 137 West State street, Columbus, Ohio, report a large number of orders as well as shipments of elevating and conveying machinery for the past month.

A steam steering apparatus for tugs has been invented by Capt. J. S. Dunham, president of the Dunham Towing and Wrecking Company, Chicago, Ill.

Messrs. Gaar, Scott & Co., of Richmond, Ind., have just issued a new catalogue, dated 1888, and given up to the interests of their traction and portable engines and agricultural machinery. A large number of illustrations, with description, are given.

The Page Belting Company, of Concord, N. H., are turning out a wire-sewed light double belt, which is claimed to be greatly superior to the ordinary forms now on the market. There is with them no danger of giving way of joints, and at the same time they are said to be fully as flexible as the hitherto commonly used cemented belts of the same weight.

Hardware.

D. R. Sperry & Co., of Batavia, Ill., manufacturers of special castings and a line of hollow-ware, are now running full time, while their grinding department is on double turn. They report an increasing demand for their Profit farm boiler, which is used for general purposes by agriculturists, from boiling feed to making soap. Shipments of their Dairy Maid stove and boiler for scalding milk cans have recently been made to the Windward Island, New Zealand and Holland. The works were established 19 years since at Batavia. In the spring of 1881 they were removed to North Aurora, where 2 acres of ground had been purchased on the east side of the Fox River. The buildings now in use on this site embrace a foundry 70 feet by 140 feet, grinding and tumbling room 20 feet by 70 feet, and machine and repair shop 15 feet by 40 feet. A warehouse 30 feet by 60 feet has also been built. The buildings are all frame. The machinery is operated by water-power, the equivalent of 40 horse-power, being conveyed from the water-wheel to the factory, which are 500 feet apart, by means of a ½-inch cable. The hands now employed comprise 24 molders and 30 grinders, finishers and helpers.

The Hermann-Parker Hardware Mfg. Company, of St. Louis, filed a confession of judgment last week in Judge Barclay's court for $25,000 in favor of Geo. H. Goddard, who holds notes against the concern for the amount named. There are other liabilities, but these are small, so the total, including the judgment confessed, will not exceed $30,000. All the indebtedness will be paid off in full, and the business of the present firm discontinued. —*Age of Steel.*

The Thomas & Wentworth Mfg. Company, Milwaukee, Wis., manufacturers of brass goods and engine trimmings, were burned out on the 15th inst., with a loss of over $50,000, covered by insurance.

The works of the Grand Detour Plow Company, at Dixon, Ill., were burned on the 12th inst., involving a loss of $75,000. The office and the storehouse filled with finished goods were saved. The works were built of stone, and only the walls were left standing.

The Drew Hardware Company, at Jacksonville, Fla., were burned out on Sunday night. Reported loss on stock $90,000.

The Topeka Garden Tool and Implement Mfg. Company, Topeka, Kan., have been organized with the following officers: C.C. Hunter, president; C. K. Holliday, Jr., vice-president; George W. Watson, treasurer; J. N. Stauffer, secretary; T. P. Rodgers, business manager; R. R. Gaskill, superintendent of works; directors, C. C. Hunter, G. W. Watson, T. P. Rodgers, S. H. Downs, R. R. Gaskill, C. K. Holliday, Jr., and J. N. Stauffer. The company have entered upon the manufacture of a variety of agricultural implements and garden tools, among which a line of cultivators, invented and patented by the president of the company, have a prominent place. These cultivators include 12 styles of horse and hand cultivators and 2 styles of seed drills.

The grain cradle and snath factory of Thomas C. Fisher, Anderson, Ind., was entirely destroyed by fire February 19, together with the entire stock of finished goods, which were ready for shipment. Mr. Fisher is therefore compelled to cancel all orders for cradles and snaths for shipments this season. Immediate steps, it is stated, will be taken to rebuild.

The Old Dominion Iron and Nail Works, Richmond, Va., have their new horseshoe factory in operation, turning out the Walker forged horse and mule shoes of high quality. The factory, until recently, was located in Baltimore, but has been purchased and removed to Richmond. The steel plant of the company was started last month and Old Dominion steel nails are now offered to the trade.

The Cincinnati Corrugating Company, Cincinnati, are putting on the market this season their improved line of superior corrugated iron lath, and report extensive contracts in the South and Southwest and in connection with Government and other large public buildings in different parts of the country. They call attention to the use of iron lath as one of the features of modern construction, adding greatly to the strength and durability of buildings, with greater immunity from fires and reduced expense for insurance.

The Cleveland Twist Drill Company, Cleveland, Ohio, advise us that they have shut down a week owing to a failure of their boiler, and as this is their busy season they have been delayed in filling their orders. They are, however, again in running order and will turn out the goods rapidly.

The Empire Knife Company, W. Winsted, Conn., are largely extending their trade. James R. Alvord, who originated and has managed the concern for 30 years past, is succeeded by his three sons, who are energetically pushing the business. The company have recently added a new and complete corkscrew plant to their factory, and are now manufacturing in addition to their line of pocket knives and solid steel shears, a fine line of solid steel-wrought corkscrews. S. L. Alvord attends personally to the manufacture and to the details of the business, while C. L. and G. S. Alvord will continue traveling, looking after their large trade in the East. McCoy & Sanders, 26 Warren street, New York, continue to have the sole control of their line of Pocket Knives in the West.

The Continental Wire Company, St. Louis, Mo., are about 25 carloads behind on orders and driving the factory to its fullest capacity. One of their operators turned out last week 6000 pounds of cattle wire in one day.

Trevor & Co. have just completed for the Union Indurated Fibre Company a huge 50-ton hydraulic press, which is referred to as a splendid piece of work, and is intended for pressing pulp for the manufacture of the larger articles, among which may be named refrigerators. When this press is erected and ready for operation it will stand 15 feet high and weigh 10 tons. This addition to their machinery is another step in the application of the company's processes for the manufacture of their enlarging variety of goods.

Miscellaneous.

A press dispatch from Beaver Falls, Pa., under date of the 13th inst., says: "The manufacturers of this place are now casting about for a supply of fuel other than natural gas, as it is evident that that cannot be depended upon, at least from the present companies. A committee has been appointed to look into the merits of the Westinghouse process. Some people claim that there is abundant gas if it was developed, and a movement is now on foot to put down a well on the plot near Knott & Harkers' factory and in other parts of town."

A dispatch from Huntingdon, Pa., under date of the 18th inst., reads as follows: "To-morrow morning the 300 ore-mine hands employed by the Rock Hill Iron and Coal Company, in the lower end of the county, will be out of work, the company having too large a stock on hand. It is reported that they have about $70,000 worth of ore stored near the furnaces at Orbisonia. The shut-down is indefinite."

Messrs. E. P. Allis & Co., of Milwaukee, Wis., have issued a very attractive catalogue devoted to roller mills. A number of full page illustrations, measuring about 10 x 14 inches, are given, showing different forms of mills of their design located at some of the principal points of the flour-milling industry.

The D. M. Steward Mfg. Company, manufacturers of electric insulators, lava gas tips, rolling-mill crayons, &c., have issued a notice to the effect that they have removed their office and works to Chattanooga, Tenn.

The Shields & Brown Company, manufacturers of sectional insulated air coverings for steam pipes, &c., have removed their office and works to more commodious quarters, at 240 and 242 Randolph street, Chicago.

The Grand Detour Plow Works, at Dixon, Ill., were partially burned, involving a loss of $100,000.

The Cleveland Nickel Works were burned last Friday and the Standard Foundry Company lost valuable patterns. The fire originated in the building used for japanning, adjoining the main structure.

H. R. Kennedy, 199 South avenue, Rochester, N. Y., has been appointed by the Rutland Fire Clay Company to handle their goods in New York State as general agent, with headquarters at Rochester.

THE WEEK.

The Improved Dwelling Association of Boston, whose object is tenement house reform, will this spring erect three four-story buildings, all connected, to have an average depth of 100 feet and a front 142 feet wide. The rents will average 80 cents a room per week, yielding 5 to 6 per cent. on the investment. In the rear of the block will be a large yard of 1500 square feet, opening to the back street, and this will be a playground for the children. Sanitary arrangements of the most approved kind will be provided.

The directors of the Lehigh Valley Railroad Company at their meeting held on the 15th inst., authorized an increase of 20 per cent. in the capital stock of the company, or about $6,750,000, which will be allotted to the present stockholders proportionately at par. Fractional shares in the new issue will be recognized as entitled to full shares. Payments may be made in full between April 1st and 15th, or if in five equal installments at intervals of three months from April, 1888, to 1889. The new capital will be used in payment for the Roselle and South Plainfield Railway lands recently acquired at Jersey City, terminals now being constructed at that point, additional equipment, increase of the lake fleet, &c.

An electric motor similar to those in use in London was successfully tested in Buffalo. It is of the storage battery style, carrying a charge of electricity lasting four hours. About 2¼ miles were made in 30 minutes.

A suit for damages against a number of prominent leaders of organized labor has been commenced by Brace Brothers, whose laundry business was boycotted, and who allege that by means of circulars and other devices their customers are being driven away. The suit is brought in the form of an action in trespass to recover $10,000 damages for injuries to the business of Brace Brothers, alleged to have been caused by the actions of the defendants. A capias was issued for the arrest of the defendants, bail being fixed at $300 each.

What the great sugar trust will do in 1888 is estimated by a leading broker in a circular just issued. During the current year, the writer says, all the non-trust refineries—say two in Philadelphia, one in Boston and two in San Francisco—will be run to their fullest capacity, and should melt about 370,000 tons sugar (27 per cent. of entire production), which will leave at least 1,000,000 tons to be melted by the trust refineries, or say 73 per cent. of entire production. One million tons, at 2240 pounds per ton, is 2,240,000,000 pounds, which at the present difference of 1¼ cents per pound between the two standards of raw and refined gives ⅝ cent per pound net profit, or say $14,000,000 net profit to the trust for the year. The capital of the trust is said to be about $45,000,000 to $50,000,000, which includes, say $15,000,000 to $20,000,000 original value of the separate refineries.

The East River tunnel to connect Manhattan island with Jersey City is being pumped out for the sixth time since the work was commenced, and Colonel Haskin expresses his delight with the excellent condition of the iron plating and interior lining of brick. If on further examination all appears well, it is said, the requisite funds will be furnished by an English syndicate.

The engineers selected by the East River Bride trustees to devise improved terminal facilities in this city presented 17 different plans. The board of experts approve of the circulating system devised by A. M. Wellington, and which comprises a semi-circular loop not less than 180 feet in diameter for the purpose of securing ease of traction, ample rotunda platform space, safety in operation, simplicity and economy. It also favors architectural treatment in harmony with the majestic proportions of the bridge structure, and is equally adapted to the effective handling of trains in the greatest number equal to the maximum capacity of the bridge railway. A modification of the present cable plant and grips is advised, together with automatic block signals, track levers, &c.

Frequent judgments against the elevated railroads for damages to property, which in most cases are sustained by the higher courts, are suggestive of a possible drain on the treasury of the corporations troublesome to the stockholders, but which, after all, is only a round-about method of paying for the right of way, taken from the public as a gratuity.

A monument to Peter Cooper, in the form of a colossal bronze statue, is now an assured fact. St. Gaudens, the sculptor, has received the contract, and the cost, exclusive of the pedestal, will be $25,000. The artist is given three years in which to complete his work, but hopes to complete it much sooner. The money to pay for the monument, somewhere between $32,000 and $33,000, is already collected and in bank. The site has not been definitely fixed upon. The monument committee consists of Orlando B. Potter, chairman; ex-Mayor Franklin Edson, General Viele, Judge Charles P. Daly, John E. Parsons, Mark Eidlitz and L. M. Bates.

All arguments in favor of an underground railroad in New York are intensified by the climatic experiences of the last week. The elevated railways did well, making it at least possible to move from one end of the city to the other, but the facilities for transit thus afforded were lamentably inadequate, and were attended with extreme personal discomfort. A tunnel or covered way would have permitted the regular running of trains, with no danger of collision from blinding snow. The Board of Aldermen arrays itself in opposition to Mayor Hewitt's scheme for rapid transit, but a bill providing for the objects contemplated by him will be vigorously pushed in the Legislature.

The building trades in Chicago are active and in Boston the prospects are considered very promising. The prices for building materials in Boston will, from present appearances, remain about the same as last year, when they ruled generally a little higher than the year before, advances being made on lime, cement and bricks. Lumber ruled about as the year previous. There will probably be no advance in wages this year, and little, if any, labor trouble, as nine hours and payment by the hour appears to be satisfactory to both men and master builders.

After unusually abundant rains, crop prospects in California encourage the largest estimates for grain, fruits, wine and raisins. Of wine, 30,000,000 gallons are predicted.

General Newton, in response to an inquiry as to the plans of the Department of Public Works for the coming spring, stated that: "The appropriation available for the purpose of repaving the streets is $500,000, and for relaying and repairing $400,000."

The telegraph companies have given large orders for wire to repair losses by the recent storm.

The United States grand jury at New Orleans found an indictment against the Illinois Central Railroad for violation of the Interstate law. The charge is a discrimination against Holly Springs, Miss., in favor of Lowell, Mass., in the transportation of cotton. This is the first prosecution in the South under the provisions of the law.

Water-tight compartments and bulkheads of the most improved description have been introduced in the new Hamburg steamers for the trade with New York. The bulkheads are carried up to the upper deck without a door in them, so that should a collision occur the ship is at once in a position to take full advantage of her sub-division without any running hither and thither on the part of the crew to try to shut a number of water-tight doors.

The Reading Railroad strike, like that of the Lehigh miners, is officially declared off. The miners held out firmly for six months and returned to work at the same rate of wages that was paid when they quit September 10. The Reading men are told by Mr. Corbin that "all classes of employees on the Reading will hereafter understand that they not only hold their places, but secure promotion by merit only, and not through the influence or backing of any labor organization, and any man that leaves our service upon the order of a labor organization with the view of enforcing his demands by a strike, will not be allowed to return to it again unless such organization shall be strong enough to take possession of our property, operate it in its own interests, and against the interests and in defiance of the wishes of its owners." Mr. Corbin promises to try and get places for the strikers on other roads.

The cattle trust of Denver has closed a contract with the French Government to supply the French army with 150,000 head of beef annually. The price to be paid has not been made public. The shipments will be made to Chicago, where the cattle will be slaughtered.

The Submarine Monitor Company, which built a boat for submarine operations, was put in the hands of the sheriff, in order to collect a judgment of $9127, obtained by C. D. Shepard, for money loaned. It was incorporated March 24, 1884, with an authorized capital stock of $5,000,000, which was paid for the patents. M. Roosevelt Schuyler was the president.

St. Petersburg advices of the latest date refer to the frequency of financial failures and rumors respecting the stability of large institutions like the Russian Bank for Foreign Trades, but the best informed say that a serious catastrophe is not to be expected. The failure of an important bullion and exchange dealer caused losses on the Berlin bourse to the extent of $1,000,000. The value of the Russian rouble now stands at about the lowest point ever reached. Before the Crimean war it was worth fully 75 cents, but subsequently commenced to fall away, until at the close of the Russo-Turkish war it was quoted at 40 cents. After the Berlin Congress it recovered to 56 cents, but again dropped, until at the present moment it can scarcely be quoted higher than 34 cents.

Educating the working man in the duties of citizenship was the theme touched upon by Mayor Hewitt in addressing the graduates of Princeton College in this city last week. He said: "My experience has taught me that there is no safety when uneducated men come to deal with the rights, liberties and property of others. They can't distinguish between right and wrong. One of the conclusions at which I arrived in my early years was that it was a beneficial thing for workingmen to form associations for their mutual protection. That is my conviction now, and workingmen ought to be encouraged to form associations for their own protection. But right is one thing and its abuse is another. There

a limit to all things, and when workingmen undertake to interfere with the private judgment and the rights of others they overstep the limits, and it is the duty of college and church to tell them so."

Blizzard points: Railway traffic at New York was almost completely resumed on Friday, after four days' suspension, Street Commissioner Coleman said the removal of snow and ice cost $10,000 a day. Mails moved to all points on Friday, except to New England.

Opium smuggling across the St. Lawrence flourishes with little obstruction so long as the river is frozen and is said to be active at the present time at Prescott, Brockville and other points on Canadian soil.

The sale of E. Remington & Sons' extensive gun plant, at Ilion, was confirmed by the court. Hartley & Graham own the entire property.

The proposed electric railway in Fulton street, New York, may never be completed, as the railroad company now occupying the street have the exclusive right of way.

France has failed to conclude a new treaty of commerce with Italy, and the general tariff was put in force in the latter country on the first of the current month. England enjoyed in Italy the benefits of the most favored nation clause, so that English goods will now likewise pay the higher duties.

Assistant Secretary Maynard has informed the Collector of Customs, at New York, that after a careful and thorough consideration of disputed questions in regard to the proper method of determining the dutiable value of imported iron wire rods no good reason is perceived for a modification of previous decisions on the subject.

The Keely motor must be investigated by order of Judge Finletter, of Philadelphia, in the suit brought by Bennett C. Wilson, who claims to hold an assignment of Keely's motor invention, made to him in 1869. The Judge grants an order for the inspection of all the motor machines as made by Keely, and compels him to explain the theories of their workings to Wilson and such experts as may be named.

A New Zealand correspondent calls the attention of American manufacturers to a kind of flax which grows in great abundance in that country, possesses a strong fiber and can be had for the plucking. The cordage of the New Zealand Shipping Company's plant is made of it.

Col. Charles Scranton, of Oxford, N. J., severely injured by jumping from a coal train a few days ago, died Friday night. He had large iron interests and was prominent in New Jersey politics.

A scale of wages has been prepared by the tin and sheet-iron roofers to govern the trade for the coming year. They will demand $3.50 a day and a nine-hour working day.

Barrels are now being made of hard and soft wood, each alternate stave being of the soft variety and slightly thicker than the hardwood stave. The edges of the staves are cut square, and, when placed together to form the barrel, the outsides are even, and there is a V-shaped crack between each stave from top to bottom. In this arrangement the operation of driving the hoop forces the edges of the hard staves into the soft ones until the cracks are closed, and the extra thickness of the latter causes its inner edges to lap over those of the hardwood staves, thus making the joint doubly secure.

The Pine Lumber pool, in California, have succeeded during the past year in advancing the prices of lumber $12 to $15 per 1000 feet, on the ground of high shipping rates and increased wages. They control ships and mills and regulate the prices of pine lumber to suit themselves.

Master Workman Powderly is devoting his energies to pulverizing Mayor Hewitt.

The decision of Judge Gresham in the complaint of the Burlington against the Wabash, a Chicago correspondent says, has had the effect of compelling the other lines to handle Burlington freight in short order. Much of the force of the decision was lost because of the changed attitude of the Wabash regarding the hauling of Burlington freight. Had the original refusal remained in force, there is no doubt that a peremptory order would have been issued by Judge Gresham to Receiver McNulta commanding him to obey the law and let labor troubles take care of themselves. It is equally certain that stern measures would have been brought into operation had it appeared from the evidence that combination or conspiracy existed among the engineers and firemen to coerce the Wabash into a suspension of relations with the Burlington.

The very unsatisfactory trade relations between Brazil and the United States is spoken of by the Rio de Janeiro *News*, and the proposed removal of duties heretofore levied by the United States is used as an argument in favor of reduced import charges on American products. The editor says: "Rough iron pays 15¾ per cent., hardware generally 50.40, and guns the same. Cutlery and clocks also pay 50.40 per cent. Sewing machines are also rated at this figure. All the above are the percentages that the customs authorities state is the ratio on which duties are levied. We see, therefore, that Brazil is levying duties almost entirely at the rate of 50.40 per cent. on cost, charges and freight on every article that might be supplied by the very country that has thrown open its markets to Brazilian products without the imposition of any taxes. Will any one tell us whether this is a state of affairs upon which a satisfactory trade can be built?"

By means of recent improvements made in the manufacture of rifles, as many as 120 barrels can now be rolled in an hour by one machine. They are straightened cold and bored with corresponding speed, and even the rifling is done automatically, so that one man tending six machines can turn out 60 or 70 barrels per day. With the old rifling machine 20 barrels was about the limit of a day's work, but the improved machines attend to everything after being once started, and when the rifling is completed ring a bell to call the attention of the workman.

In speaking of the number and value of the residual products of coal tar, Mr. G. S. Page, of New York, makes the interesting statement that if the entire gas works of the country were to cease producing gas as a business there would remain a capital of $250,000,000 invested in the production of residuals of coal tar alone.

City garbage now yields $18,200 per annum to the public treasury.

Nearly $7,000,000 of stock, to be issued by the Lehigh Valley Railroad Company, will be used to increase the lake fleet and in making other improvements.

The statement in the Pennsylvania Railroad annual report relative to the injury, unchecked by law, which is done American railways by the competition of the Canadian roads, gives expression to a sentiment generally felt by American railway managers. "Sufficient time has hardly elapsed," the report says, "to determine what will be the effect of the Interstate Commerce law upon the transportation interests. The policy indicated by the law differs so widely from that heretofore prevailing that many difficulties have arisen in endeavoring to conform the business of the country to its requirements, and in consequence thereof there has not been probably that rigid observance of its provisions which was no doubt intended. Further legislation seems to be necessary, as it is apparent that manifest injury is being done to the railways of the United States by permitting the Canadian roads to participate in the carrying trade of this country, without the ability, under the law referred to, to enforce their observance of its provisions."

A Wichita paper says a large freight engine on the Kansas Pacific Railroad ran off the track about 90 miles from Denver and, running into a quicksand, it sank out of sight. Rods were sunk to the depth of 65 feet without finding any traces of it.

One of the most interesting triumphs of invention was displayed on the Lehigh Valley Railroad during the recent storm. This railroad for some months has been using on its trains the system of communication known as "train telegraphy," introduced by the Consolidated Railway Telegraph Company. By this system it was possible to telegraph from a moving train with as much promptness and exactitude as from a stationary office. The wire being of steel and stretched upon stout poles reaching only 15 or 16 feet from the ground withstood the fury of the storm. The consequence was that all the stalled trains on the Lehigh Valley Railroad kept up constant communication with the terminus of the road, could define exactly their position, and, in short, had all the advantages of perfect telegraphic communication.

The proposition favored by Sir John Macdonald to annex Newfoundland to the Dominion, and this without first consulting the Parliament at Ottawa, excites the ire of the Montreal *Herald*, which discourses as follows: "While it might be a fine thing from the 'glory' standpoint to round off the Confederation by 'scooping in' the Ancient Colony, it must be borne in mind that Newfoundland is not likely to be attracted into the Union, except by the offer of extravagant terms, which imply greatly increased pecuniary obligations—for Provincial debt, Provincial railways, improved mail service and steam communication, and expenditure on local works necessary to the development of the resources of the island. We paid pretty sweetly for some of the more recent additions to our territory, and we have not done paying yet. Canada is not in a position at present to assume any more pecuniary obligations of this kind."

The advantages of the cable system for street railways were earnestly discussed by the Boston Board of Aldermen last week. The president of one of the local roads who had just returned from visiting several Western cities brought highly favorable reports. Everywhere the cable road is popular. In Chicago nothing better is desired. Break-downs and delays are almost unknown. A cable road started in Omaha last January has not stopped five minutes since. Cable roads, he said, are not affected by the quantity of snow in the streets. There is a power there that takes and carries along, come what will in the shape of snow. That makes a sure and reliable power.

The general strike of ship carpenters and calkers employed at lake ports was expected to take place March 1st, but at Cleveland and Buffalo the demand for higher wages is deferred, and trouble on this score may be averted.

Pittsburgh is to have a Board of Trade building of an expensive character.

The Iron Age

New York, Thursday, March 22, 1888.

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Chemistry in the Foundry.

The time is still within the memory of the majority of leading iron masters when chemical work in connection with an iron manufacturing plant was exceptional. The new-fangled notions of that day—less than 20 years since—have become a part of the daily routine now. Few furnacemen would buy ore by guessing at its contents of metallic iron, and the greater number of modern managers keep track of their work with the aid of chemical analysis. No steel maker would consent to run his plant for three consecutive days without a chemist's reports on the composition of his stock and of his product. In one great department of the iron trade, however, practically no use has been made of the assistance which chemical work may afford in purchasing supplies of the most suitable raw material or in ascertaining what kind of metal is best adapted to securing maximum efficiency in product. We refer to the foundry. More than a decade ago a series of brilliant researches were carried out by experts on the occasion of the passage of the German tariff law. It was asserted then that the imposition of a duty on foundry iron would work great hardship to consumers, because German makers could not produce an iron fit to replace English and Scotch foundry brands. The scientific tests then made completely disproved that assertion, and incidentally furnished a mass of valuable material on the relations between chemical composition and physical properties. Since then Turner, Tucker and Gautier, in Europe, and Keep and Fleming, in this country, have worked assiduously in this direction. Already the signs are accumulating that their missionary work, and that of merchants who are pushing special brands of iron, are beginning to tell. It may well be asserted that we are now on the threshold of a new era in foundry practice, which will in time sweep away the rule of thumb methods and the prejudices of a trade which in some respects has been the incarnation of conservatism.

As in the past, the furnace manager regarded his mixture as the embodiment of all that enlightened experience could teach, the founder to-day looks upon his mixture as a precious secret, to be guarded jealously from the prying of his rivals. Anything that deviates from his standard must be condemned, and accidents that deprive him of his usual ingredients find him completely floored. By the painful process of trying he has found what brands, used in given quantities, secure the most satisfactory result at the least money. If pig iron of any make were a uniform product, he might well be content to rest. But the quality of any brand varies within certain limits, and sometimes it is not available at all. The result is that founders find themselves periodically in hot water, when all their accumulated practical knowledge is of little use to them, and costly experimenting must be resorted to.

One of the principal things to which a founder pins his faith is the color and grain of the fracture of the iron. Now, it may happen that identity of appearance conceals very great differences in chemical composition, and naturally widely different behavior in the cupola. Mr. A. E. Tucker has strikingly shown this in a lecture before an English society. He quotes the following two analyses of irons, whose fracture was such that no difference could be detected:

Graphitic carbon	3.07	3.06
Combined carbon	1.42	0.51
Silicon	0.96	1.96
Sulphur	0.04	0.08
Phosphorus	0.07	0.62
Manganese	0.24	0.62

The second would be a fair foundry iron, while the first would probably not work well in the cupola. Mr. Tucker has also proven the reverse proposition that practical identity of chemical composition does not by any means imply approximation of fracture. There can be little doubt that the physical aspect of pig iron is largely influenced by conditions affecting its crystallization, such as temperature, length of time in cooling, &c. To use the fracture of pig alone as a guide in estimating the utility of iron for a given purpose is to follow a very uncertain guide indeed, and yet it would be an almost equally dangerous proceeding to work to a set chemical specification alone. It is to be expected that many perplexities will surround the solution of the questions how far physical and how far chemical causes influence the characteristics of raw material and of product. In itself the effect of the different constituents of the iron upon one another in emphasizing or blurring the influences of one of them is likely to make it practically impossible to assign to phosphorus or silicon or carbon an influence capable of numerical expression. What has been witnessed in steel rails may be expected to occur in foundry iron. Yet an intelligent and persistent investigation of the chemical constituents of pig iron, coupled with a close observation of results in the foundry, will prove an invaluable aid toward either accomplishing good work with poor raw materials, or will lead to reduced cost by limiting the quantity of defective work. Of late the direction in which improvement has been sought is the employment of high silicon pig for increasing the scrap-carrying capacity of mixtures.

To some extent the pig-iron manufacturer will be able to meet the founders half way when he is freed from the necessity of paying so much attention to grading and giving more to a chemical specification.

Some time since the fact was dwelt upon at length in these columns that the product of the Lake Superior iron ore mines was destined to be carried to consumers very largely by rail. Recent developments in the vicinity of Chicago indicate a more rapid approach of this diversion of the ore-carrying trade from the lakes than was then intimated. One steel company is now reported to be receiving from the Gogebic range on new contracts from 400 to 500 tons a day by rail, while other consumers have been in regular receipt of rail shipments since the close of navigation. But the nearest Lake Superior districts are not alone in arranging for rail shipments, as a dispatch from Duluth states that the Minnesota Iron Company have contracted to deliver iron ore from their Vermillion range by rail, while arrangements have also been made for such shipments next winter after the close of navigation. Another indication of the approaching change is the prospect held out to ore-shovelers on furnace docks at Chicago. They are told that if they are not willing to make a satisfactory agreement on the wages question for the coming season their services will not be needed at all, as the ore will be shipped by rail. The advantages of rail shipments, to be made regularly during the entire year, as compared with hurried shipments by water during the navigation season, with the necessary piling up of huge stocks to last until navigation again opens, are so obvious that the proper rate of freight by the railroad companies would seem to be all that is needed to bring about the change. Ultimately rail shipments would extend to more distant points, such as the Ohio furnaces, and perhaps even to Pittsburgh.

The German Basic Steel Trade.

Since the United States has been lately one of the largest single consumers of basic steel exported from Germany, some importance attaches to an animated discussion which took place lately at a meeting of the German Society of Iron Metallurgists. It grew out of the proposal to commit the Society to resolutions in behalf of an improvement of the navigation of the Moselle River, from Metz to Coblenz, coupled with a demand for a reduction, in the interval of construction, in the railroad freights on the Minette ores of Lorraine and Luxemburg to the furnaces of the Lower Rhine district and Westphalia. The great steel industry of the country is centered in these districts, and the fear is expressed that unless relief is afforded sharp suffering will follow. Broadly speaking, these steel works have taken the lead in the manufacture of basic steel, but now that they have succeeded in developing it, in finding markets for it, they are threatened with serious complications in securing the raw material. Until now the works in the districts named have obtained their ore from the bog deposits of the lower Rhine, and the old puddle cinder, too, has been an important source of phosphorus to them. The former are practically exhausted, and the latter has been pretty well worked up, so that German furnaces have been forced to reach out as far as Great Britain for cinder. The best material available would be the oolithic ores of Luxemburg and Lorraine, where enormous quantities, sufficiently high in phosphorus and otherwise suitable for making basic pig, are known to exist. As a matter of fact, growing quantities of this class of ore have been used, but the high freights on them are running up cost of manufacture of basic steel. Hence the demand for Moselle River improvement, to make cheap water rates possible, and the cry for a prompt lowering of ore freights. It is urged that the Government can well afford to carry ore more cheaply,

because they are hauling very large quantities of coke from Westphalia to the furnaces located in the ore fields, a large percentage of ore cars returning empty. It is the old controversy between works established near the coal, and furnaces placed near the ore, which in a somewhat different form, is now agitating the steel rail makers of Pittsburgh and Chicago.

Some idea of the quantity of basic pig produced in Germany and the growth of that manufacture is afforded by the following statistics for 1884, 1885 and 1887:

Pig Production in Germany, by Grades.

	1887.	1885.	1884.
Mill and Spiegel.	1,906,329	2,163,797	2,202,247
Bessemer.....	432,090	477,468	486,083
Thomas or Basic.	1,076,140	668,065	488,746
Foundry.....	492,805	447,445	395,079
Total.....	3,907,364	3,756,775	3,572,155

Nearly one-half of the enormous product of 1,076,140 metric tons was produced in the districts affected, and the requirements this year are estimated at 600,000 tons. On the Prussian roads the freight on Minette ore is about 0.8 cent per mile for the first 30 miles, with 0.75 cent per mile beyond that distance. Roughly, the freight from mines in Lorraine to Westphalian furnaces is $2 to $2.12 on ore worth 55 cents to 85 cents a ton at mine. Since the bulk of the ore does not average over 33⅓ per cent., a furnace located in the coke district would have to pay freight on three tons of ore, while a plant at the ore mine would pay only on one ton of coke and one ton of pig to the works in the coal field, thus giving it an advantage equivalent to the saving on the haul of one ton of ore, or $2.

During the discussion one of the officials of the Krupp works, Dr. Jencke, of Essen, thoroughly reviewed the freight question, and, though very guarded in his censure, threw a curious light on the ponderous methods of the management of the State railroads. In 1882 an appeal was made for lower freights, which was finally granted in 1886. To Americans the most interesting contribution to the question were the remarks uttered by A. Thielen, of the Phœnix Works, Ruhrort, one of the best informed authorities in Germany, who started with the statement that the capacity for export of the German iron trade depends chiefly on the manufacture of basic steel, in the development of which that country has outstripped all competing nations. Although Middlesboro' is the home of the basic process, and although there the works are in immediate vicinity of the ore mines, and have a short haul on fuel, the Germans have succeeded in producing four times as much basic steel as the English, and in finding an outlet for the product. Herr Thielen believes that the reason has simply been that the German concerns have worked better technically and more scientifically than the English works, and that the former naturally turned to the process. While the last few years have witnessed further progress, it is probable that now a period of rest has been entered upon, and it may be doubted whether any further reduction in cost will result from continued improvements in working. The question now arises whether the works of the Lower Rhine and Westphalia are in a position to produce basic steel to the same extent against the competition of the Saar district, England and Belgium without any reductions in freight rates. Herr Thielen claims that they cannot. He insists that ultimately an industry must succumb which must carry off its raw material in the form of cinder from the very doors of competitors, which must go to the Saar district, England, Scotland and Belgium for cinder.

While probably allowance must be made for some emphasis of statement under circumstances so prone to cause exaggeration as those surrounding an appeal for lowering of freights, there can be no doubt that the steel-makers of the district chiefly affected are facing a formidable problem. Some talk of seeking relief by putting up blast furnace plants nearer the ore mines. Possibly the present situation, if it continues, may lessen slightly the pressure upon our markets which the works in the district affected have exerted during the past few years.

Mexican Progress.

President Diaz's term will expire on December 1st next. Congress passed a special bill last fall enabling him to be re-elected, and his friends are working hard to bring this about. The fact is that Mexican affairs, through his good management, aided by such statesmen as Rubia and Mariscal, have taken such a favorable turn for a year or two past that it would be a pity to disturb, and perhaps interrupt, the good headway that is being made. The Federal revenues during the fiscal year ending June 30, 1887, netted $31,168,353, being $3,357,444 more than the collection of the previous year. The principal cause of this increase in the receipts may be found, first, in the collection of import duties, which in the fiscal year rose to $17,268,650, while in the previous year they did not exceed $14,852,980; second, in the receipts from stamps, which reached $7,538,150, against $5,877,458 in the previous year; and, third, in the new tax on delaine, which yielded $885,560. The actual expenditure amounted to $38,773,920, being $7,101,084 more than the previous year, which deficiency was due to extraordinary claims against the nation that had been allowed and had to be canceled. From December 13, 1886, to December 31, 1887, Mexico effected the conversion of £11,623,519 of old bonds into £4,253,811 of the new consolidated debt, a process which is still going on, to terminate on the 11th of June next. Now a new 6 per cent. Mexican loan has been floated through the banking house of Bleichröder, Berlin, to the amount of £10,500,000 at 84. At the time the conversion of the English debt was resolved upon and authorized by Congress, the total debt of the nation amounted to $156,161,872, and certain advantages were allowed the Government if the conversion were effected before a certain date. Of this, naturally, the Government availed itself, and in this manner the total indebtedness of the nation has been materially reduced.

If we consider that Mexico, while covering an area of 1,946,292 sq. km., has a population exceeding to-day 11,500,000 inhabitants, the national debt as it is may be looked upon as quite moderate, and now with a good financial administration and general prosperity prevailing throughout the land, without even an attempt at revolution, it is probable that the finances will work easily and not leave room for occasional disappointments, such as were experienced during the Gonzalez administration. The army has been reduced to 18,894 men and 1741 officers, still being sufficiently large to easily quell any disturbance that might arise during election times. The navy is composed of four gunboats. The merchant marine of Mexico consists of 421 sea-going vessels and 847 coasting craft.

Of railroads, 6095 km. are in working order. The telegraph system embraces 21,000 km. of Federal line; 1653 km. State line; 4431 belonging to railways; 3301 to private parties, and there is besides a Mexican cable 703 km. long, the whole constituting a total of 31,088 km. The Government has 327 telegraph offices in operation. Post offices number 311, all told, but there are besides 688 minor offices or agencies. In 1885 the number of letters and postal cards dispatched in the interior amounted to 13,253,290, and foreign letters handled to 804,034. The number of employees was 1472; the receipts were $744,013, and the expenses $743,973.

The Government is giving special encouragement to all mining enterprises which may aid in augmenting the gold production of the country. Two liberal concessions have been made for mining exploration and the working of gold deposits in the territory of Lower California and in the State of Chihuahua—entire exemption from taxation for ten years. It is especially stipulated that companies working mines under these concessions shall smelt three-quarters of all the ore mined in Mexico, and for this purpose the companies are going to build smelters. This is to further the development of the home smelting industry, and all recent mining concessions have contained this clause, it being the policy of the Government as far as possible to keep the profits arising from the production of ores in the country. It is rumored that the Federal Government intends to place a duty on the exports of ore with a view of promoting the prosperity of the smelting industry in the republic. It is also said that the Government contemplates loaning money to companies erecting smelteries and taking mortgages on the property. Should a heavy export duty be put on none but the richest grade of ores could be sent abroad for reduction, but mining operations would be restricted, since now the exports consist chiefly of comparatively low grade argentiferous lead ores. A general mortgage and investment company, with a capital of $15,000,000 in gold, has been organized in London to operate in Mexico, this being the fourth company with a heavy capital organized in England within the last four months to develop properties in Mexico, evidencing the interest and influence English capital is acquiring in the republic. The preliminary reconnoissance of the route from Vera Cruz to Acapulco was made in December by the engineering experts sent over from England, and it is reported that feasible and comparatively economical routes have been found. It is therefore probable that the report of the experts to the London syndicate having the building of this line in view will be favorable. A novelty in the operation of this line which is likely to be introduced is the employment of rack railways on the heaviest grades, by means of which and

the employment of specially built locomotives trains of great weight can be easily hauled over difficult ground. The construction of the interoceanic railway to the Pacific coast now appears likely to be an accomplished fact. It will probably be the first railway making an interoceanic connection.

The draining of the Valley of Mexico is an important undertaking, but most necessary if the City of Mexico is ever to become a thoroughly healthy city. The Government has made a contract with an American concern, the Cleveland Company, which is to dig a canal for the purpose, while the tunnel that will be necessary is to be Government work. Notwithstanding contradictory reports, the negotiations between a New York syndicate and a Mexican mortgage bank for acquiring the charter of that institution continue satisfactorily. A party of capitalists from the United States are expected to arrive soon in the city of Mexico, with the object of taking part in the negotiations. If carried through this would give American capital predominence for the first time in any Mexican banking institute, to the great benefit of American commerce.

General Bragg, the new American minister, arrived at the City of Mexico on February 29. American interests, although now amounting to nearly $200,000,000 in Mexico, are absolutely without treaty protection, as the treaty defining the status of Americans there in business has lapsed. It is to be hoped and presumed that General Bragg will take up this matter, in which General Jackson, his predecessor, had been busying himself. The Mexican Government stands ready to undertake in a friendly spirit the negotiations of a treaty adapted to modern times and this railway era.

The import into Mexico has fluctuated as follows: 1881–82, $39,020,000; 1882–83, $38,951,000; 1883–84, $34,025,000, and 1884–85, $35,839,000, the fluctuations being due chiefly to the greater or smaller amount of railroad material procured abroad in any one year. The total export was $46,670,845 in 1884–85; in 1885–86 it was $43,647,717; the former amount included $33,774,081 specie and bullion, nearly exclusively silver, and the latter $29,906,401, the rest in both cases being merchandise. Exports in 1885–86 were distributed as follows:

	Silver.	Merchandise.	Total.
To Germany....	$2,32,629	$738,770	$1,571 399
To Spain.....	654,287	259,.36	913,523
To the United States..	15,496,336	9,533 358	25,429,.94
To France.....	3 447,117	4:9 160	3,936 277
To England.....	9,417.464	2,1:2,604	11 600,068
To other countries....	58.568	138,288	196.856
Total.....	$:9.906.4 1	$13,741.3 6	$43,647,717

The customs' revenues collected at the port of Vera Cruz for the last ten years amount to $97,000,000.

Chief among products reported in 1885-86 were, in value: Horses, $282,625; indigo, $119,087; sugar, $178,887; coffee, $1,619,724; India-rubber, $108,488; sisal hemp, $2,844,356; rope, $523,649; wool, $220,071; mahogany, $901,032; fustic, $110,874; logwood, $670,299; goat skins, $994,468; hides, $997,876; deerskin, $101,-089; silver lead, $485,948; cigars, $316.-991; tobacco, $211,578; Vanilla beans, $463,395; sarsaparilla, $119,837; cochineal, $13,850; and other products, $2,376,992—together, $13,741,316. Aniline colors seem to be doing away with cochineal more and more in Europe and America. American trade was as follows:

Fiscal year.	Import.	Domestic export.
1886.....	$10,687,972	$6,856,077
1887.....	14,719,840	7,267,129

The last figures presented are from the returns of our own bureau of statistics. So far as they relate to exports they are probably defective, for the same reasons that our Canadian statistics are incomplete. Still, they show a moderate growth and illustrate well the importance to this country of close commercial relations with our neighbors.

The Trust Investigating Committee, which has endeavored to go so deeply into the question of dangerous trade alliances in this State, has finally introduced a bill which is intended to be a measure of protection to the much-injured consumer. The bill simply prohibits any individual, company or corporation to enter "into any combination, contract, or agreement, express or implied," the intent or effect of which would be to limit production, or fix or increase the price to the public of any commodity known as a necessity of life. A second section provides that stockholders or directors of any combination shall not enter into any agreement, the effect of which shall place the management of the corporation in the hands of any trustee with the intent to reduce the production or fix the price. The penalty is forfeiture of corporate franchises of corporations, the annulment of combination contracts, while individuals, stockholders or directors of corporations are declared guilty of misdemeanor if they violate this law. The act is certainly brief and emphatic, but it is far too sweeping to have any chance of remaining long on the statute books, even if passed. The fact is evidently forgotten that unrestrained, wild competition is as disastrous to the consumer as the most notorious monopolies can be. It means an enormous destruction of capital, the abandonment of plants whose existence would have been a guarantee against excessive rise in prices at times of an exceptional demand. The ordinary trade combinations, which are so summarily condemned, are at best temporary expedients to convert a war disastrous to all into an armed truce. The abuse of the power they may confer to a few is justly condemned by all, but its judicious use certainly confers benefits upon the producer, the trader, the consumer and the community at large.

Some additional interesting figures of the relative position of Chicago and Pittsburgh as steel-making districts have been printed in the *Bulletin* of the American Iron and Steel Association: "Joliet is a near neighbor of Chicago, in the same State, and Johnstown, Pa., is a near neighbor of Allegheny County. Adding the production of Bessemer ingots and rails at Joliet, in 1887, to the figures for Chicago, and adding the production of Johnstown to that of Allegheny County, we have the following totals: Chicago and Joliet—ingots, 748,271 gross tons; rails, 642,580 tons. Allegheny County and Johnstown—ingots, 728,797 gross tons; rails, 414,027 tons."

Josiah E. Rutter, secretary and treasurer of the Lickdale Iron Company, of Lickdale, Pa., died at his residence in Lebanon, Pa., on the morning of the 9th inst., of congestion of the lungs, after a short illness.

CORRESPONDENCE.

Foreign Steel Rail Mills.

To the Editor: Please be kind enough to give a list of foreign steel rail makers.

H. S. J.

NASHVILLE, TENN.

We give below a list of the principal makers in Great Britain and Germany:

GREAT BRITAIN.

Barrow Hematite Steel Company, Limited, Barrow-in-Furness.
Henry Bessemer & Co., Limited, Sheffield.
Blaenavon Company, Limited, Blaenavon, Monmouth.
Bolckow, Vaughan & Co., Limited, Middlesboro'.
Charles Cammell & Co., Limited, Cyclops Works, Sheffield.
Darlington Steel and Iron Company, Limited, Darlington.
Dowlais Iron Company, Dowlais, Glamorgan.
Ebbw Vale Steel, Iron and Coal Company, Limited, Ebbw Vale, Mon.
Staffordshire Steel and Ingot Company, Limited, Bilston.
Northeastern Steel Company, Limited, Middlesboro'.
Moss Bay Iron and Steel Company, Limited, Workington.
Rhymney Iron Company, Rhymney, Mon.

GERMANY.

Friedrich Krupp, Essen.
Gesellschaft für Stahl-Industrie, Bochum.
Phœnix, Laar bei Ruhrort.
Gutehoffnungshuette, Oberhausen, 2.
Hoerder Bergwerks u Huetten-Verein, Hoerde.
Union, Actien-Gesellschaft für Bergban, Eisen-und Stahl-Industrie, Dortmund.

As early as December 3, 1885, a convention of accredited delegates from ten civil engineering societies in the United States, held at Cleveland, urged the necessity of some reform in the present method of carrying out harbor and river improvements under the Government. On March 31, 1886, a second meeting was held, representing nearly 3000 civil engineers, at which a national committee on public works was appointed to draw up a memorial to the President of the United States. This work has been carried through by this executive board, of which L. E. Cooley, of Chicago, is president, who submitted an address to President Cleveland recently. We have been favored with advance sheets of this document and with the elaborate memorandum accompanying it, in which the proposed reforms are thoroughly worked out. It is urged with justice that the present system of detailing a number of military officers to duty on river and harbor works, for which they are not qualified either by training or experience, leads to excessive expenditures and a good deal of superfluous work. It is now proposed that a Department of Public Works be organized under the War Department, which is to be officered both by civil and military engineers, with adequate compensation. A bill has been drawn up and presented both to the House and the Senate embodying the main features of the plan. The project is certainly one which deserves the hearty cooperation and encouragement of all interested in the improvement of our water ways and our harbors. Instead of being pushed through Congress as immature plans by lobbying, such schemes for the improvement of public works would first go before a board of thoroughly trained engineers, who would work out the details and would keep the entire development in harmony throughout the country.

Lower Freight Rates on Coke.

At a meeting of the representatives of roads having connection with the Connellsville coke regions, held in Pittsburgh on Wednesday, the 14th inst., it was decided to reduce the rates on coke about 5 per cent., the reduction to take effect on Monday, the 19th inst. Below we give the new rates on coke from the Connellsville region to points named, in tons of 2000 pounds:

Akron, Ohio	$2.10
Altamont, Ill	3.67
Alton, Ill	3.67
Anderson, Ind	3.15
Ansonia, Ohio	3.05
Arcanum, Ohio	3.05
Ashland, Ohio	2.60
Ashtabula, Ohio	2.40
Albany, N. Y	3.20
Bellefontaine, Ohio	2.85
Bradford, Pa	2.60
Brier Hill, Ohio	1.57
Brighton, Ohio	3.05
Beaver Falls, Pa	1.40
Boston, Mass	4.50
Cairo, Ill	4.35
Caledonia, Ohio	2.75
Carlisle (Franklin) Warren Co	3.05
Carmi, Ill	4.35
Carondelet, Mo	3.82
Carrollton, Montgomery Co., Ohio	3.05
Carthage, Ohio	3.05
Cattaraugus, N. Y	2.60
Charleston, Ill	3.67
Chrisman, Ill	3.67
Cincinnati, Ohio	3.05
Cleveland, Ohio	2.10
Coal Bluff, Ind	3.30
Connersville, Ind	3.15
Corry, Pa	2.60
Crawfordsville, Ind	3.30
Crestline, Ohio	2.65
Creston, Ohio	2.60
Cumminsville, Ohio	3.05
Coalbing, Ohio	2.10
Dayton, Ohio	2.85
Delaware, Ohio	2.65
East St Louis, Ill	3.67
Edison, Ohio	2.65
Edwardsville Junction, Ill	3.67
Effingham, Ill	3.67
Eldorado, Ill	4.35
Elmwood, Ham'n Co., Ohio	3.05
Enfield, Ill	4.35
Enon, Ohio	2.85
Evansville, Ind	4.35
Fairfield, Ill	4.35
Flora, Ill	3.67
Franklin, Warren County, Ohio	3.05
Franklin, Pa	2.10
Galion, Ohio	2.65
Garrettsville, Ohio	2.10
Girard, Ohio	1.57
Grafton, Ohio	2.65
Grayville, Ill	3.67
Great Valley, N. Y	2.60
Green Castle, Ind	3.30
Greenville, Darke County, Ohio	3.05
Greenville, Mercer County, Pa	1.85
Hamilton, Ooio	3.05
Hartwell, Ohio	3.05
Hubbard, Ohio	1.57
Haselton, Ohio	1.57
Indianapolis, Ind	3.15
Ivorydale, Ohio	3.05
Jamestown, N. Y	2.60
Jeffersonville, Ind	3.67
Kansas, Ill	3.67
Kent, Ohio	2.10
Kenton, Ohio	2.90
Lawrenceville, Ill	3.67
Leavittsburg, Ohio	1.85
Leetonia, Ohio	1.57
Lima, Ohio	2.90
Litchfield, Ill	3.67
Little Valley, N. Y	2.60
Lockland, Ohio	3.05
Louisville, Ky	3.67
Ludlow Falls, Ohio	3.05
Lynn, Randolph County, Ind	3.05
Lowellville, Ohio	1.57
Mansfield, Ohio	2.60
Mantua, Ohio	2.10
Maplewood, Ohio	3.05
Marion, Ohio	2.75
Marshall, Ill	3.67
Martel, Ohio	2.75
Mattoon, Ill	3.67
Meadville, Pa	2.10
Mechanicsburg, Ohio	2.85
Miamisburg, Ohio	3.05
Middletown, Ohio	3.05
Milford, Ohio	2.75
Mitchell, Ind	3.67
Mt. Carmel, Ill	3.67
Muncie, Ind	3.15
New Albany, Ind	3.67
Newburg, Ohio	2.10
New Castle, Ind	3.15
Niles, Ohio	1.57
Norris City, Ill	4.35
North Vernon, Ind	3.67
New Castle, Pa	1.57
New York City, N. Y	3.50
Odin, Ill	3.67
Oil City, Pa	2.10
Olean, N. Y	2.60
Olney, Ill	3.67
Osborne, Ohio	2.85
Pana, Ill	3.67
Paris, Ill	3.67
Piqua, Ohio	2.85
Princeton, Ind	4.35
Pittsburgh, Pa	0.84
Randall, Ohio	2.10
Randolph, N. Y	2.60
Ravenna, Ohio	2.10
Reno, Pa	2.10
Richmond, Ind	3.05
Robinson, Ill	3.67
Rushville, Ind	3.15
Rochester, N. Y	2.75
St. Francisville, Ill	3 67
Salamanca, N. Y	2.60
Sandoval, Ill	3.67
Seymour, Ind	3.67
Sharon, Pa	1.57
Sharpsville, Pa	1.57
Shattuc, Ill	3.67
Shawneetown, Ill	4.35
Shelby, Ohio	2.65
Shenango, Pa	1.85
Sidney, Ohio	2.90
Solon, Ohio	2.10
Springfield, Ohio	2.85
Sterling, Ohio	2.60
Stewardson, Ill	3.67
Sullivan, Ill	3.67
Sullivan, Ind	3.67
Struthers, Ohio	1.57
Syracuse, N. Y	2.90
Tallmadge, Ohio	2.10
Taylorville, Ill	3.67
Tecumseh, Ohio	3.05
Terre Haute, Ind	3.30
Transfer, Pa	1.85
Troy, Ohio	2.85
Union City, Ind	3.05
Union City, Pa	2.60
Urbana, Ohio	2.85
Utica, N. Y	3 10
Vernon, Ohio	2.65
Versailles, Ohio	3.05
Vincennes, Ind	3 67
Wadsworth, Ohio	2.60
Wann, Ill	3.67
Warren, M. D., Ohio	1.85
Warren, M. L., Ohio	1.85
Washington, Daviess County, Ind	3.67
Wellington, Ohio	2.65
West Middlesex, Pa	1.57
Wheatland, Pa	1 57
Winchester, Ind	3.05
Windsor, Ill	3.67
Youngstown, Ohio	1.57

Traffic Facilities on the Brooklyn Bridge.

The growing popularity of the Brooklyn Bridge as a means of communication between New York and its sister city has become apparent to every one, and, if proof were needed, is shown very strikingly by some recently published figures. With the increase in the number of passengers, chiefly in the bridge cars, there has been a correspondingly growing demand for greater train facilities, and the point has at last been reached where some decided change in the transportation methods must be adopted. The present plan of switching the cable cars by independent engines at the terminals, while not very objectionable in itself, has outgrown its usefulness, and a greater capacity for accommodating trains can be secured only by the adoption of a system by which time can be saved at the stations.

A board of engineers appointed by the bridge trustees about a year ago to suggest a means of most satisfactorily solving the problem have just finished their labors with some very interesting results. The figures which have been gathered show that the total number of passengers on the bridge railroad in 1886 was 24,478,324, and in 1887 it was 28,238,540, an increase of 15.36 per cent. From all the data collected the board arrived at a curious estimate of the future traffic on the bridge, the annual total for the year 1897 being given as 91,473,440, representing a 24-hour daily average of 250,610. The capacity of the present three and four car trains, running under a headway of 1½ minutes, already falls far short of the requirements, being respectively 120 and 160 cars per hour, each car seating 44 persons. During the hour between 7 and 8 a. m. it is estimated that for 1888 there will be nearly 11,000 passengers crossing from Brooklyn to New York. How much more urgent the demand for carrying facilities will be in the near future need, therefore, not be pointed out.

From the report, of which portions are available, it appears that 17 different plans to relieve the present situation were considered, and of these the simple circulating system specially commended itself. The plan as proposed by Mr. A. M. Wellington is, briefly stated, to spread the two cable tracks a little at each end and connect them by a horseshoe curve of 90 feet radius, extending nearly to the street line of Park row. The radius might be considerably shorter, except that it would not give a sufficiently commodious station for permanent requirements and good architectural effect, corresponding to the structure and location. The entire terminal horseshoe thus formed is to be inclosed under one roof, and a similar station is to be erected on the Brooklyn side. Trains of 18 cars, less, of course, until all are needed, are to be run into this station, completely taking up, when stopped, the horseshoe form, with the head and rear cars opposite each other. The entrance to each train is to be from an inside platform only, and exit from an outside platform. Special entrance and exit doors are to be provided to facilitate quick loading and unloading on either curved or straight track. The extreme dimensions of the proposed building are 434 x 288 feet of horseshoe form. At the east end it would terminate at the west face line of the Rose street arch; at the west end at the sidewalk line of Park row. The switching tracks which now extend half way across the street are to be done away with. This station, although no longer than the present terminal, including the rear extension of tracks over Park row, would hold a train of 18 cars 50 feet long, or 900 feet in all, with room to spare at each end, and it could be arranged to hold 1000 feet of train. Ten of the 18 cars could unload nearer to Park row than at the present platform for three-car trains.

It will be understood without difficulty that the design thus provides for a continuous working of the trains without switching—a point of no little importance—and attention is further directed to the fact that should the time ever come when the maximum capacity of the present cable railway is exhausted, with a still increasing demand for additional service, there remains the ability to construct an entire duplicate set of cable railroad tracks, carried on top of the present trusses, or over the roadways, or over both, as might be found most expedient in working out detail plans. These tracks would be admirably adapted for connections with the Brooklyn elevated railroads, and could be most conveniently accommodated with a terminal on a second story, above the tracks of the present cable railroad, in the same building recommended in the report, and into which the tracks of the Manhattan Elevated Railroad could also be conveniently taken, thus giving direct connection with the Brooklyn Elevated Railroad system, and enabling an entire removal of the present terminal station of the Manhattan Elevated Railroad over Chatham street. And finally it is argued that should the project of underground lines to the City Hall be finally decided upon, no better site for a terminal could be desired than that afforded by the space beneath and inclosed by the foundation walls of the station building recommended in the report. In point of completeness and consideration for future

contingencies Mr. Wellington's plan is thus very acceptable.

So far as safety appliances are concerned the engineers' committee recommend in connection with the system just outlined a complete system of block signals over the entire length of both tracks, with signal targets or semaphores erected at intervals of about the average headway length of the trains, operated automatically by cars passing over "track levers," so that the guard in charge of every train will be at once signaled whenever the next preceding train has failed to preserve its proper headway interval, and also for the purpose of properly signaling and giving due notice, should necessity arise for reducing speed or stopping trains when approaching the terminal stations. There is no mechanical difficulty in devising such a system, as it would not differ materially from systems already in very successful operation on other railroad lines, and for which any competent signal engineer can prepare details and specifications. The leading car of every train should have a separate compartment at the front end, or a separate car should be attached to the head of each train, constituting the counterpart of the engineer's cab on an ordinary locomotive, in which should be located mechanism for operating the grips and brakes of every car in the train. The Westinghouse brake is recommended.

Judging from the somewhat general outline of Mr. Wellington's plan, it seems to be well designed to effect a satisfactory change. At the same time, however, it is not by any means certain that it will be carried into execution, but must, for the present, be simply regarded as an entering wedge in the work of reconstruction.

WASHINGTON NEWS.

(*From Our Regular Correspondent.*)

WASHINGTON, D. C., March 20, 1888.

Committee consideration is becoming heated. The Republican minority, deviating from their original programme of entering against the Mills bill for revenue reduction and tariff revision, a simple *pro forma* opposition, have been playing the *rôle* of obstructionists, and in so doing have weakened their own position, and have caused considerable incipient disagreements in their own ranks. The deliberations in committee are now being conducted both in day and night sessions for the sake of hastening the report of the bill to the House. As the majority have laid down an inflexible rule of sustaining each item of the bill as it is taken up, any opposition on the part of the minority is a waste of time. During a recent night session Mr. Reed sent a few darts of invective among the majority, which raised such a war of words that there was for a time a very fair prospect of a physical demonstration between the senior Breckenridge and the stalwart-bodied representative from Maine. The chairman, by a timely intervention, cooled the ardor of the wordy combatants.

The discussion of the bill in committee has resulted in no changes of a material character as compared with the original measure. It is now expected that the bill will be reported to the house by the end of the present week. Thus far the only change of any consequence has been the restoration of steel in ingots, &c., to the 45 per cent. rate. Speaker Carlisle, who has been in conference with the Democratic leaders since his return from the West, says that he does not entertain the fullest confidence that the Mills bill will pass the house. There are certain features in it, he thinks, which will be antagonized by some of the Democrats in the protection States. He is now satisfied that free wool will drive away Democratic support which the measure would otherwise receive. He does not counsel the omission of wool from the proposed free list, but rather that it be held there for action in the house. He thinks that it might there be used as a basis of compromise

In reference to the Randall bill, he says that it is a prudent measure, taken as a whole, but it would have been stronger if it had provided for a repeal of the duty on sugar instead of repeal of the tax on whisky. That would have given it the support of a number of Democrats. The repeal of the tobacco tax he considered fair.

In referring to the sugar duty, the speaker said that the repeal of that would affect no interests except in Louisiana. He did not think, however, that the people would favor a bounty to the Louisiana sugar growers. Although this idea was first broached in the very inception of the policy of American protection, he did not think that public opinion would favor such a course now.

The Speaker is zealous in his efforts in support of the Mills bill and is doing all he can to get it into shape, so that it may be the basis of action in the House even if not passed in its entirety. A failure to pass it in some shape would be a serious blow to the Administration. Speaker Carlisle will be able to give the measure considerable support by his course in the chair. Representative Scott, of Pennsylvania, says: "The Mills bill is not quite up to what we expect to do, but it is an advance in that direction. We will do the best we can and leave the rest to the people. If the verdict is for us in the coming campaign, our way in the future will be clear."

The Democratic member from Pennsylvania is also responsible for the remarkable statement that six out of the eight Democrats of the Pennsylvania Democrats in the House will vote for the Mills bill, the exceptions being Randall and Sowden. The six Representatives claimed are very reticent on the subject. It is hardly credited that they will all vote as reported, although three or four are likely to do so.

The views of Governor Lee, of Virginia, on the protection issue in that State have caused much comment and speculation in Congressional circles. These views, taken in connection with the speech of ex-Gov. Joe Brown, in the Senate, are not encouraging to those who propose to reduce the revenue by lowering the duties on imports. Both Senator Brown and Governor Lee agree that certain Southern States are in a condition to demand of Congress the same protection in the future which was given to certain States of the North in the past. Virginia, Georgia, West Virginia, Tennessee and Alabama are in that list, and neither of the gentlemen named will be responsible for the adherence of those States to present political affiliations if a change of economic policy be made.

The Republicans having heard from their constituents are now disposed to modify their obstruction tactics and permit the question to come before the House, where all can have a chance to assert their views. They have as yet no counter proposition to offer, but will be governed by circumstance—a poor way to face an important issue upon which the people will take sides one way or the other.

Mr. Randall explains his course by saying that his bill was prepared so as to give the people of the country the plan of revenue reduction which the protection Democrats propose. This would remove from them the charge often made that they were obstructing legislation.

While confusion and divided counsels reign on revenue reduction, the House is practically doing nothing in the way of other legislation so as to have the table cleared. More than half an ordinary long session has elapsed, and every principal appropriation bill is unreported. When tariff discussion begins, the time of the House will be mostly frittered away in contests for precedence of business. It is almost safe to say that the prospects of concurrent action on revenue reduction during this session of Congress are decidedly hazy.

Disastrous Strikes.

The blows of the Locomotive Brotherhood are the least kindly among all the strikes that have afflicted a much stricken people. Departing from their accustomed conservatism, through which they had earned a high and honorable name, they engaged in a tilt with the great Chicago, Burlington and Quincy system, although Chief Arthur disclaims all responsibility for that grand mistake. The Northern Pacific wavered in its allegiance, but the partial disaffection of the engineers in that instance was too circumscribed in geographical limits to have any important effects. Then quickly followed the strike of the Brotherhood on the Wabash system, affecting a wide territory, but the company, availing themselves of the receivership in which their affairs had been placed, promptly appealed for protection to the United States Court, where Judge Gresham's decision, though somewhat equivocal in terms, had the desired effect—admonishing the engineers that their position was untenable. Thereupon a halt was called and the threatened embargo of trade was effective only in part, and temporarily. The next serious development—all these the event of a single fortnight—was a revolt of the engineers on the great Atchison, Topeka and Santa Fé lines, involving thousands of miles in its vast system of roads. The company and the patrons of the several lines were alike astonished, in the absence of any grievance either alleged or pretended. It was pronounced on all sides causeless and wanton.

This movement was in the nature of a sympathetic strike, and it met with the hearty condemnation of the people generally, irrespective of their business interests. Under such circumstances it will be remarkable if the prestige of the brotherhood as the most conservative and therefore the most powerful labor organization is not destroyed for many years. The public generally are disposed to see fair play between contestants of whatever character, but they have little patience with those who having no grievance bring about great demoralization of business to help the cause of other parties. The latest Western advices indicate that this last, and to the engineers most disastrous strike, has abruptly terminated, in which case the railroad position in the West assumes a more hopeful phase. At the same time there is the possibility of a general tie-up of nearly all the roads centering in Minneapolis and St. Paul if the roads continue to handle "Q" cars against the wishes of the Brotherhood. Thel essons taught from the experience of the past few days should have a most satisfactory influence, at least as guaranteeing the public protection from similar acts of folly for a long time to come. Chief Arthur informed his adherents that they must either win or perish as an organization. It is certain the Brotherhood has been badly shattered. Their prestige as an organization, if not irrevocably gone, is lamentably tarnished.

The German Government have ordered the construction of a cruiser which is to attain a high rate of speed and the cost of which is estimated at $1,000,000. She is to be built in the Germania yard at Kiel.

TRADE REPORT.

British Iron and Metal Markets.

[*Special Cable Dispatch to The Iron Age.*]

LONDON, WEDNESDAY, March 21, 1888.

There has been little change in the condition of the Pig Iron market—certainly none for the better. Scotch production continues to exceed the outlet considerably, and there are now in Connals' stores fully 100,000 tons more than at the corresponding date last year. Values are consequently weak. The situation is much better in the Cleveland district, the product of which is barely on a level with the aggregate shipments and home consumption. The condition of the Scotch market, however, operates to check any improvement in prices. Prices on Scotch and Middlesboro' Pig are about the same as last week, but Bessemer Pig is somewhat lower.

There is a very fair business in Manufactured Iron in most districts at generally steady prices. The Steel trade is somewhat uneven, with a fair business in Plates, Billets and Rails, but only a moderate inquiry for other descriptions. Values are slightly in buyers' favor, with Rails said to have been sold at a shade less than the prices generally quoted.

Holders of Old Iron Rails are still firm, despite the somewhat unfavorable reports from the American market, but sales are not extensive nor the demand brisk.

A contract of more than ordinary interest has been closed by the Teeside works. It was for nothing less than a complete blast furnace plant for China, which, when completed, will be the first furnaces erected there.

No new feature has transpired in the Copper market. Stocks continue to increase, and the visible supply is now about 55,000 tons, or 10,000 tons more than at the beginning of the year. Messrs. James Lewis & Co. report a resale of 850 tons Anaconda Matte at 14/9 ℔ unit, and a sale of 70 tons Montana Matte at 15/ ℔ unit.

Pig Tin for future delivery has found but moderate sale at the reaction from last week's decline, and the market is still governed wholly by speculative influences. Nothing new has developed with respect to the Lead market, and Spelter has shown but little change.

The condition of the Tin-Plate trade is without change for the better. Sales still run rather light, and Cokes are not infrequently placed at prices a shade under those currently quoted. The makers are doing practically nothing in the direction of forming a combination or restricting the output. The Pontnewydd Works, Newport, are to be sold by auction. They operated two mills. The "strike" at the Cwm Avon Works, Taibach, has been settled.

Cleveland Pig.—The market is steady with demand fair. No. 1 Middlesboro', G. M. B., 34/; No. 3 do., 31/6.

Bessemer Pig.—Prices are lower and the market dull at the decline. West Coast brands, mixed numbers, 42/6, f.o.b.

Scotch Pig.—Business continues slow, and prices have shown little change:

No. 1 Coltness,	f.o.b.	Glasgow.	48/
No. 1 Summerlee,	"	"	48/
No. 1 Gartsherrie,	"	"	45/
No. 1 Langloan,	"	"	46/
No. 1 Carnbroe,	"	"	41/
No. 1 Shotts,	"	at Leith	46/
No. 1 Glengarnock,	"	Ardrossan	44/6
No. 1 Dalmellington,	"	"	40/
No. 1 Eglinton	"	"	39/

Steamer freights, Glasgow to New York, 6/: Liverpool to New York, 7/6.

Spiegeleisen.—Transactions moderate but prices steady. English 20 % quoted at 75/, f.o.b.

Steel Rails.—Very little change; prices still irregular and the demand uneven. Standard sections quoted at £3. 17/6 @ £4, f.o.b.

Steel Blooms.—There has been a fair business, at slightly lower prices. We quote at £3. 11/3, f.o.b., for 7 x 7.

Steel Billets.—A good trade still reported and prices are steady. Bessemer, 2½ x 2½ inch, £3.18/3, f.o.b. at works.

Steel Slabs.—Demand slow and prices without change. Bessemer £3. 18/3, f.o.b. at works.

Steel Wire Rods.—The market steady but quiet. Mild Steel No. 6 quoted at £5. 17/6, f.o.b.

Old Rails.—Demand moderate, but sellers firm. Tees quoted at £3 @ £3. 1/3 and Double Heads £3. 2/6 @ 3/5, c.i.f., New York.

Scrap Iron.—Only a moderate trade and prices unchanged. Heavy Wrought at £2. 10/ @ £2. 12/6, f.o.b.

Crop Ends.—Business moderate and prices somewhat nominal. Bessemer quoted £2. 5/ @ £2. 7/6, f.o.b.

Tin Plate.—The market has remained quiet, with very little change in values. We quote, f.o.b. Liverpool:

IC Charcoal, Allaway grade	16/6 @ ..
IC Bessemer steel, Coke finish	.. @ 14/6
IC Siemens " " "	.. @ 14/9
IC Coke, B. V. grade	@ 14/6
Charcoal, Terne, Dean grade	13/6 @ 13/9

Manufactured Iron.—Demand runs fairly. Prices a shade lower on Common Bars, but otherwise unchanged. We quote, f.o.b. Liverpool:

	£	s.	d.	£	s.	d.
Staff, Ord. Marked Bars	7	10	0 @	..	..	..
" Common "	5	0	0 @	5	2	6
" Bl'k Sheet, singles	6	15	0 @	6	17	6
Welsh Bars (f.o.b. Wales)	4	15	0 @	4	17	6

Tin.—There has been a fair business at firm prices. Straits closed at £166 @ £166. 5/, spot, and £135, three months' futures.

Copper.—Trade very moderate, but prices held firmly. Chili Bars, Spot, closed at £80. 7/6. Best Selected, £80.

Lead.—Moderate sales at about former prices. Soft Spanish, £14. 5/ @ £14. 7/6 at the close.

Spelter.—Market rather weak, with sales light. Silesian, ordinary, £19 @ £19. 5/ at the close.

Financial.

OFFICE OF THE IRON AGE,
WEDNESDAY EVENING, March 21, 1888.

New York City survives the terrible blizzard, but sustained heavy losses in the total suspension of traffic for at least two days, being cut off in all her communications, both by wire and rail. So absolute was the condition of non-intercourse that only a single long-distance telephone line enabled the Pennsylvania Railroad Company to communicate between officers at either end of the route, and between New York and Boston the sole dependence was the Atlantic cable via London. The first mails to arrive after the storm were received on Thursday by the Pennsylvania road and the New York Central. The accumulation of mail matter at the New York Post Office amounted to several tons. The wharves being inaccessible and the streets closed by barricades of snow, steamships were compelled to sail without cargoes. On the Cotton, Produce and other exchanges no business of consequence was transacted before Friday morning, in the absence of advices from any quarter, but on Saturday the movement of merchandise was resumed on a considerable scale, coastwise and otherwise.

Stock Exchange transactions up to Saturday night were not larger in the aggregate than the business often done in a single day. Strike news throughout was the principal factor. On Monday, succeeding a period of weakness, there was more confidence. Western Union was favorably affected by the decision of the United States Supreme Court in the Bell Telephone case. To-day nearly the whole list declined. The failure of the Commercial National Bank was reported, with $500,000 deficit. The granger roads voted to restore rates 26th inst.

United States bonds closed as follows:

U. S. 4½s, 1891, coupon	106¼	@	106¾
U. S. 4s, 1907, coupon	125⅜	@	125⅝
U. S. Currency 6s, 1895	120	@	....
U. S. Currency 6s, 1896	122	@	....
U. S. Currency 6s, 1897	124	@	....
U. S. Currency 6s, 1898	127	@	....
U. S. Currency 6s, 1899	129½	@	....

For obvious reasons general trade during the last week received a severe check. The combined effects of the storm and the strike of the Brotherhood of Locomotive Engineers served to derange the usual channels of traffic through a large section of the country. Added to these influences were tariff agitation and questions before Congress which have a direct bearing on trade, manufactures and finance. The threatened extension of the strike has not been realized; on the contrary, the general indications are improved. The European outlook is more peaceful, as shown by the better tone of all the bourses on the Continent. The presence of high Russian officials at the obsequies of Emperor William was especially significant. Freight discriminations cause more or less uneasiness as affecting competition for Western trade, but the chief anxiety just now is caused by the accumulation of delayed orders, as the railways are not fully restored in their transportation facilities. Spot wheat is lower and weak; exporters favored by cheap ocean rates. Breadstuffs easy. Spot cotton is reduced ⅛¢., and one failure of "longs" is reported. Coffee is unsettled; little confidence in present values. Sugar steady, with improved demand. India rubber firm. Provisions dull. Tobacco, demand light, principally for export.

The east-bound shipments of freight from Chicago last week were 55,852 tons, against 66,917 tons the corresponding week of last year.

The weekly statement of the Associated Banks showed a decrease of $1,475,050 in surplus reserve, owing to the continued absorption of funds by the Government. The reserve, however, is still $10,012,250 above legal requirements, as against $7,335,350 a year ago. In loans there was an expansion of $498,300, while deposits increased $500,600; the only change of significance being the loss of $1,593,600 specie, which chiefly went in the United States Treasury. The movement of currency to and from interior points was unusually light. The money market in New York has undergone little change, as rates for time loans are about 5 %, while mercantile paper is quoted 5 @ 6 % discount, with

a good demand from out-of-town banks. The Chicago market was but slightly affected by the interruption of business relations with New York. Aside from fears of labor troubles, there is a hopeful feeling in Western mercantile circles. According to the Custom-House report, the exports of specie from this port during the week were $541,960, and the imports $850,250. Since January 1 the totals are $5,985,627 and $2,665,568, as compared with $5,071,500 and $3,869,000 for the same time last year. The Senate Finance Committee yesterday agreed to a favorable report on the Aldrich plan for substituting 2½ % bonds for the outstanding 4 %, and paying at once the difference in interest worth. The passage of the bill to provide fractional currency was pretty generally received with favor by those merchants in this city who receive much money through the mails in small amounts.

Mr. Goschen's scheme for refunding a portion of the British debt at a lower rate of interest is expected to become a law, and already a demand for other securities, bearing a higher rate, is having its effect. It is believed that many holders of consols will invest in Americans in considerable amounts. The Bank of England reduced its discount rate from 2½ to 2 %, the former rate having held since February 16. The rate one year ago was 3½ per cent., and 2 per cent. was not quoted until April 24. This event also favors the American market. The importations of merchandise at this port during the week were $2,500,000 below that of the previous week, the total being $8,370,000, of which $2,726,000 represents dry goods. Since January 1 the aggregate is $107,240,900, against $99,343,800 for the same time in 1887 and $94,200,000 in 1886. The exports were much reduced, the total being only $4,686,300. Since January 1 the aggregate is $68,536,000; same time last year, $72,695,000.

A meeting of the open-hearth and Bessemer steel manufacturers is to be held on the 29th inst., in this city.

The rate on muck iron from the Mahoning Valley, Ohio, and the Shenango Valley, Pa., to Pittsburgh has been reduced from $1 per ton to 85 cents per ton.

A leading Southern iron manufacturer, in a letter written on a different subject, makes the following comments, which are of general interest as bearing on the manner in which the pig iron trade is being conducted: "Iron producers are suffering a good deal from the insane competition among producers or their agents, and this probably applies to Southern manufacturers just now more than to any others. Although the consumption of pig iron is still up in figures, although stocks were never so low as compared to consumption as they now are, yet the large producing companies have rushed into the market booking orders right and left for iron which they are unable to produce. This is certainly no sound business practice, and it may be considered immoral, if that word can be at the present day applied to business transactions, on the part of sellers or buyers. The whole thing smacks of weak financial condition, or, perhaps, stock jobbing. Whatever it may be, it is injurious to business generally, and to producers particularly. Never in the history of the country was the production of iron on a sounder foundation, if the producers would only reflect, compare figures and act wisely."

The National Supreme Court, by a majority of the judges who sat at the argument, though by a minority of the whole court, renders judgment in favor of the validity of Bell's telephone patents.

New York.

American Pig.—With the exception of reports of some activity, probably accumulated orders, from New England points, the week has been very quiet, with only a few sales of round blocks, among them one of 1500 tons for delivery during the balance of the year. Choice No. 1 grades of Foundry Iron remain as scarce as they have been, and with the limited production of the districts usually supplying this section no immediate relief can be expected. The Iron manufacturers of the Lehigh Valley have had a conference with the Coal operators looking to a reduction in the price of Anthracite. As yet no decision has been reached. The course of Southern makers is giving rise to considerable comment. They seem to be eager to book orders at all times and under all circumstances, and yet their deliveries are slow and far behind their contract obligations. Even under these circumstances they display considerable eagerness for further orders. Consumers have not changed their attitude. The reports from them vary widely—some are idle, or nearly so, while others are so busy that they give out work. On the whole, however, the demand has undoubtedly fallen off, but it may well be questioned whether, so far as this section is concerned, it has declined as rapidly as the production. Our blast furnace statistics showed that since January 1, 1888, the decline for the Anthracite furnaces alone has been very close to 10,000 tons per week. While it may be granted that a considerable proportion of this is due to the falling off of furnaces connected with Steel works, yet it will be conceded that the bulk of the falling off is due to Foundry and mill grades. We quote good to choice No. 1 Foundry $20.50 @ $21.50; No. 2 Foundry, $19 @ $19.50; Cinder Mixture $18 @ $18.50, and Gray Forge, according to quality, $16 @ $16.75. We note the sale of a few thousand tons of Gray Forge to a local mill at private terms.

Scotch Pig.—The demand is moderate and prices remain low in sympathy with those on the other side. While Scotch producers are eagerly waiting for the American consumption to start a buying movement, the slightest indication of larger orders leads to marking up of prices, so that importers are ordering only in very small blocks as the demand arises. We quote Coltness, $20.50 @ $21; Dalmellington, $19 @ $19.50; and Eglinton, $18.75 @ $19.

Bessemer Pig.—An order for 3000 tons from the Pittsburgh district of a special brand of Bessemer Pig which has been in the market has been withdrawn, one of the Sharpsville furnaces undertaking to make the Iron. The specification is said to be exceptionably rigid.

Spiegeleisen and Ferromanganese.—We note a purchase by an Eastern mill of about 3000 tons, partly Domestic, on a long-time contract, and partly Foreign, from prompt delivery from stock here for which a shade over $27 was paid. For sailer shipment, Foreign, 20 % we quote $27. Ferro has been sold a shade under $52 for 80 %.

Iron Ore.—The situation is somewhat mixed. Some of the New Jersey mines report a fair demand at about 7¢ a unit at mine. The Champlain district may lose some of its larger customers in the Schuylkill and Lehigh valleys, and there are indications of an effort to push Minnesota Ores in the Eastern market, though prices are still too high. Some of this Ore has been purchased by a leading Eastern mill. Foreign Ores continue weak, Rubio being offered at 9½¢ ex-ship, New York.

Bar Iron.—The market continues irregular and unsteady. We quote carload lots on dock, 1.70¢ @ 1.75¢ for Common; 1.75¢ @ 1.85¢ for Medium, and 1.85¢ @ 2¢ for Refined, with half extras.

Structural Iron.—We quote Bridge Plates at 2.10¢ @ 2.20¢; Angles, 2.20¢ @ 2.30¢; Tees 2.7¢ @ 2.9¢ in round lots on dock, and Beams and Channels, 3.3¢. Plates we quote: Iron Tank, 2.1¢ @ 2.25¢; Shell, 2.3¢ @ 2.5¢; and Foreign Steel Plates, 2.25¢ @ 2.3¢ for Tank; 2.45¢ @ 2.50¢ for Shell, and 2.8¢ @ 3¢ for Flange and Fire-Box.

Steel Rails.—The only transaction of any consequence reported during the week has been a sale by an Eastern mill of 7000 tons for Southern delivery. From the West come reports of greater eagerness on the part of the mills to book orders. One of the Eastern mills has been granted an increase in the allotment of 10,000 tons, half of which has been given by each of two Western mills. The total sales up to March 1 are reported by the Board of Control to have been 565,629 tons, to which, however, sales since then completed will certainly largely add. It is probable that the sales to date are not less than 700,000 tons. We quote $31 @ $31.50. There is a fair amount of inquiry for light Rails, which we quote $32.50 @ $33 for 40's; $33 @ $34 for 35's; $33.50 @ $34 for 30's; and $34 @ $34.50 for 25's, with 20's at $35 @ $36 and 16's at $39.50 @ $40.

Billets and Blooms.—Small orders for Foreign have been placed at $30. We quote $29.50 @ $30.

Wire Rods.—There have been a few sales of 500-ton lots. We quote $40.50, at tide-water, for Foreign.

Old Rails.—The market has been exceedingly dull and continues weak. Under the offering of both large and small lots, we hear of a sale of 200 to 300 of Tees at $21 on cars at Jersey City; while Doubles have been offered in round blocks to consumers at $21, free to barge. One of the leading consumers has withdrawn a bid of $21 for Doubles on a large quantity. One of the large English roads is asking for tenders for a large block, but it is not likely that purchases for American account will be possible.

Scrap.—The market is weak, with free offerings at $20.

Railroad Fastenings.—We quote: Spikes, 2.15¢ @ 2.20¢, and Angle Bars, 1.85¢ @ 1.9¢.

Pittsburgh.

Office of *The Iron Age*, 77 Fourth avenue, Pittsburgh, Pa., March 20, 1888.

Our manufacturers generally complain that they are not doing anything like the business they did at this time last year, and while some are hopeful of a change for the better before the close of the spring season, others are dubious. The great obstacle in the way of general business is labor complications, which are becoming quite numerous, not only here but throughout the country. While most of the Iron and Steel mills are in operation, but a small proportion are working up to anything like their full capacity. The Homestead Steel Works, Carnegie, Phipps & Co., suspended some 200 workmen a few days for want of orders, and it is feared that other concerns may be compelled to do likewise. In addition to labor trouble tariff agitation has had a bad affect by disturbing a number of important interests.

Pig Iron.—There is no improvement to note in this important Pittsburgh interest; extreme dullness is still the order of the day, and the indications for an early improvement are not encouraging. No fur-

naceman in the present condition of the market can more than hold his own under the most favorable circumstances, and it is evident that unless there is a change for the better soon the number of idle furnaces will be still greater. Firms that ordinarily think nothing of buying 500 or 1000 tons of Iron are now buying 50 or 100 tons, and they expect to buy each lot at a lower price than the former one. Not for a numbes of years has business been so poor aud unsatisfactory as it is at present, and it is not strange that furnacemen are anxious. Prices continue weak and unsettled. Sales of standard brands of Neutral Gray Forge at $15.75 @ $16 cash, and a sale of 1000 tons Bessemer was reported at $17 cash at a valley furnace. Foundry Irons are very dull. We quote as follows:

Neutral Gray Forge	$15 75 @	$16.00,	4 mos.
All Ore Mill	16.75 @	17.00	"
No. 1 Foundry	18.00 @	18.25	"
No. 2 Foundry	17.00 @	17.25	"
White and Mottled.	15.25 @	15.50	"
Charcoal Foundry	22.00 @	24.00	"
Cold Blast Charcoal	26.00 @	28.00	"
Bessemer Iron	17 50 @	17.75	"

Muck Bar.—There is no improvement in demand, and prices are weak and drooping, in sympathy with Pig Iron. We now quote at $27 @ $27.50, with most of the sales at $27. The great trouble just now is that the most of the mills would rather sell than buy, and the suspension of Graff, Bennett & Co. takes one of the largest buyers out of the way for the present. It may be stated in this connection that two mills of the firm in question will be started up shortly under the auspices of a syndicate

Manufactured Iron.—The demand for all kinds of Manufactured Iron continues light for the season, and but very few of the mills are working up to their full capacity; it is hoped that business will improve as the season becomes more advanced, although, as already noted, in some respects the outlook is not very encouraging. There will no doubt be an improved demand for Pipe Iron within the next few weeks, as a good many of the natural gas companies are making preparations to resume Pipe-laying, but the outlook for the general Merchant Iron trade is not very promising. We continue to quote Bars at 1.80¢ @ 1.85¢; Plate, 2.35¢ @ 2.40¢; No. 24 Sheet, 2.75¢ @ 2.80¢, all 60 days, 2 % off for cash.

Nails.—There is little or no improvement in the Nail trade. Three firms are still running partially, but any one of these could doubtless meet the demands made upon the three. But a small proportion of the machines at Wheeling are in operation. No change in prices; $2, 60 days, 2 % off for cash, in car lots and upward, and 10¢ ℔ keg additional for less than a carload.

Wrought-Iron Pipe.—The Pipe trade continues in an unsettled and unsatisfactory condition. Not only is trade very light and but few if any of the mills fully employed, but prices are unsettled and unremunerative.

Old Rails.—The market continues in an unsettled and depressed condition; consumers are still refusing to buy beyond immediate actual wants, and it is not likely that they will depart from this policy as long as the market remains in its present condition. We are advised of a sale of 200 tons, deliverable in Mahoning Valley, at $23.25, but it is rumored that sales have been made as low as $23 and $22.75, for American Tees. Consumers expect to make each purchase at a lower price than the former one, hence it is not strange that they are making very small purchases. Foreign Rails are pretty effectively shut out of this market by the low price of American; there have been no sales of the former reported here for some time.

Steel Rails.—There is some inquiry; we hear of an order for 20,000 tons having been on this market within the past week, but whether it was placed here or not we cannot state at present. Still quoted at $31.50 @ $32, cash, at mill. The Edgar Thomson Works are still standing idle.

Billets, &c.—Bessemer Steel Billets remain unchanged at $29 @ $29.50, cash; sale, 1800 tons, reported at $29.50. Nail Slabs remain unchanged at $29, cash. Rail Ends are still quoted at $18 @ $18.25.

Merchant Steel.—Best brands Tool Steel, 8½¢; Crucible Spring, 4½¢; Crucible Machinery, 5¢; Open-Hearth Machinery, 2¾¢. The Merchant Steel Manufacturers' Association had a meeting here the other day, but there was no change made in prices; business was generally reported dull.

Railway Track Supplies.—Prices remain unchanged. Spikes, 2.60¢, 30 days, delivered; Splice-Bars, 1.80¢ @ 1.90¢; Track Bolts, 2.90¢ with square and 3¢ with hexagon nuts.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St.,
PHILADELPHIA, PA., March 20, 1888.

Pig Iron.—It is difficult to define the position of the Pig-Iron market, presenting, as it does, so many different aspects. From some standpoints it looks strong, from others quite the reverse. This is in some measure due to the peculiar local circumstances, such as the strike on the Lehigh, and still later among the Reading employees. Stocks have been run down to an unusually low point at some of the furnaces, while others, owing to the inferior fuel that was used for awhile, have accumulated grades of Iron for which they have no trade, and for which there is no demand unless at figures a good deal below the market. Hence, while they have a good inquiry for their regular qualities, at fairly steady prices, they cannot easily move such grades as they have ready for immediate delivery. Then there is Southern Iron and Western Iron constantly offered at a trifle under the regular market, and, although not taken in large lots, enough sample orders have been entered to make a large business if quality proves to be satisfactory. Under these circumstances the market is a waiting one, local furnaces not caring to enter orders for forward delivery at much less than to-day's market prices, while consumers are equally determined not to buy beyond immediate requirements unless sufficient inducements are offered for them to do otherwise. Ultimately it seems as though a lower range of prices would be unavoidable. Finished Iron and other Iron products are all very much lower in proportion than the raw material, notwithstanding which Eastern mills are not holding their own against outsiders, so that cheaper Pig Iron is of the most vital importance. It may take time to adjust these matters, and especially so in view of the light stocks in both first and second hands, and the probability of a very heavy demand during the next six or eight weeks, but, all the same, the adjustment is only a question of time. A good deal will depend, however, upon affairs in the West. In the meantime, prices of both Pig and Finished Iron seem to be lower than they are here, but if Western markets have a reaction it will help the East very much, as the local conditions are unusually favorable for a large business and steady prices. But for some time past the pressure to realize on Western material has been very great, and from present appearances is likely to continue until prices here reach a point that will shut them out. Quotations on Pig Iron have varied from $20 to $21, at tide, for No. 1 Foundry; $18 @ $19 for No. 2, and $17 @ $17.50 for Gray Forge. As regards No. 1, standard makes command about $21, although $20.50 is not uncommon for large lots, and $20 for new brands. Gray Forge is steady at about $17, although there are rumors of a good many sales at about $16.50, and a little less than that even, in some cases, but all depends on quality.

Foreign Iron.—There is no business doing, and prices are purely nominal at last week's quotations—viz., about $20 for Bessemer, c.i.f., duty paid, and $27 @ $27.50 for 20 % Spiegel.

Blooms.—There is a good demand for Steel Blooms, and mills generally report a larger business in this line than ever before. Foreign Blooms are too dear to meet with much attention, but quotations for the various grades are about as follows: Foreign, $30 @ $31 for Nail Slabs; $31.50 @ $32.50 for 4 x 4 Billets, and $35 @ $39 for Siemens-Martin, price according to analysis, &c. Domestic Blooms: Steel, from $30 to $35, f.o.b. cars at mill, according to analysis; Charcoal Blooms, $53 @ $54; Run-out Anthracite, $45 @ $46; Scrap Blooms, $38 @ $39 ℔ "bloom" ton.

Muck Bars.—The market is dull, and prices rather weak, although some of the best makes at near-by mills are still held at about $30, but others are offered at from $29 to $29.50.

Bar Iron.—Business does not show much improvement, although there is probably a little more demand. Prices are very much demoralized, however, and it is hard to quote any figure as being a firm quotation. There is so much cutting in extras and so much difference in quality that 10¢ or 15¢ ℔ 100 lb is not at all unusual in quotations. Some of the best known makers quote 1.9¢ @ 1.95¢, firm, and claim to be getting it, while others are free sellers at a tenth less. There is undoubtedly a great deal of business being done at from 1.8¢ to 1.85¢, and it may be very good Iron, but some of the leading mills assert that they cannot produce and guarantee quality at any such figure. It may be noted, however, that none of the mills are very full of work, those quoting low figures being as badly off as those at the higher rate. The great trouble is that the volume of business is not large enough to go around, and as each mill tries to run full, prices are consequently declining. Skelp Iron is dull, and no demand can be found at anything near the asking prices, which are about 1.9¢ for Grooved and 2.1¢ to 2.2¢ for Sheared.

Plate and Tank Iron.—No change of any importance can be noted in this department. There is a fair demand at about last week's prices, but the mills are so bare of work that they are all competing for business without getting very much ahead. Prospects are fairly encouraging as to consumption, but not satisfactory as regards prices. Asking rates about as follows: Ordinary Plate, 2¢ @ 2.10¢; Tank, 2.10¢ @ 2.15¢; Shell, 2.4¢ @ 2.5¢; Flange, 3.5¢; Fire-Box, 4¢; Steel Plates, Tank and Ship Plate, 2.4¢ @ 2.5¢; Shell, 2.8¢; Flange, 3¢ @ 3¼¢; Fire-Box, 3¼¢ @ 4¼¢.

Structural Iron.—There is a considerable amount of business doing in a quiet way, and most of the mills are tolerably well employed on Shapes, although, in sympathy with other departments, the feeling in prices is a little heavy. No specially large orders have been given out of late, but there are a good many contracts on hand, so that full employment seems to be assured for some time to come. Prices are quoted about as follows, say 2.10¢ @ 2.20¢ for Bridge Plate; 2.15¢ @ 2.25¢ for Angles; 2.7¢ @ 2.8¢ for Tees

and 3.3¢ for Beams and Channels, Iron or Steel.

Sheet Iron.—Considering the condition of the weather, the demand has been very fair, and quite a large business has been done for the season. Small lots of best makes quoted about as follows:

Best Refined, Nos. 26, 27 and 28....	3½¢
Best Refined, Nos. 18 to 25	3¼¢
Common, ¼¢ less than the above.	
Best Bloom Sheets, Nos. 26 to 28....4½ @	4¾¢
Best Bloom Sheets, Nos. 22 to 25....4 @	4¼¢
Best Bloom Sheets, Nos. 16 to 21....3½ @	3¾¢
Blue Annealed.....2.8 @	3 ¢
Best Bloom, Galvanized, discount.....60	%
Common discount.....65	%

Steel Rails.—The market is quiet but steady at the quotations recently ruling. Western mills are understood to have taken some large contracts within the past ten days, while the Eastern mills are doing only moderately in Rails, but are very full of work in other lines, such as Blooms, Billets, &c. On the whole, therefore, the Bessemer Steel interests are in pretty good condition, and a steady market is confidently expected at about to-day's prices, say $31.50 @ $32 for Rails at mill, and from that to $32.50 for small lots.

Railway Supplies.—There is not much demand at present, but prices are fairly steady at 2.15¢ @ 2.25¢ for Spikes; 1.9¢ @ 2¢ for Fish Plates, and 3¢ @ 3.10¢ for Track Bolts.

Old Rails.—No sales have been made in this market, so far as we can learn. There is an offer to-day of $21 for a spot lot of T's, with $21.50 asked, but the market has a very dull appearance. No demand of any importance, as consumers' requirements are very moderate.

Scrap Iron.—The demand is not large, but as the offerings are light sellers seem to be in a position to maintain prices at about the following rates: $21 @ $21.50 asked for No. 1, or $22 @ $22.50 for carload lots, or for choice $22.50 @ $23; No. 2 do., $14 @ $15; Turnings, $15 @ $16; Old Steel Rails, $20 @ $21; Cast Scrap, $16 @ $17; do. Borings, $11 @ $12; Old Fish Plates, $26 @ $27. Old Car-Wheels, $18 to $19. Philadelphia, or its equivalent.

Wrought Iron Pipe.—This important branch of the Iron trade fails to show much improvement. There is but little business being transacted, and prices remain weak and unsatisfactory. Complaints are numerous from manufacturers on account of low and unremunerative prices at present ruling, but it is difficult to see how the situation can be improved so long as business is competed for as sharply it is at the moment. Discounts are quoted as follows: Black Butt-Welded, 50 %; on Galvanized do., 42½; on Black Lap-Welded, 62½ %; on Galvanized do., 50; Boiler Tubes, 57½ %.

Nails.—The Nail market remains about in the same condition as last reported, and, generally speaking, trade is very light. Quotations are nominally unchanged, from $2.10 to $2.15 for lots of Iron Nails from store. There is some degree of uncertainty in regard to price, but some look forward to a large spring trade, and as stocks are unusually light, they are of the opinion that a brisk demand will be the means of stimulating price.

The Bullitt Building on South Fourth street, Philadelphia, is becoming quite a center for the Iron trade. In addition to the splendid offices occupied by Naylor & Co. and Lindsay, Parvin & Co. in that building, we have now to add the name of J. J. Mohr, who removes there this week.

Diamond State Iron Company, of Wilmington, Del., have arranged with W. H. Walbaum & Co., No. 206 South Fourth street, Philadelphia, to be represented at that place by their assistant secretary, Mr. H. F. Wallace.

Chicago.

Office of *The Iron Age*, 95 and 97 Washington St., Chicago, March 19, 1888.

The railroad troubles have affected the various classes of business very differently. The demand for Steel Rails, Pig Iron and other heavy materials is undoubtedly curtailed by the demoralizing influences operating on the business of the railroads and the uncertainty as to the future, although in the case of a few consumers of Pig Iron purchases have been hastened by the published announcement of the restoration of freight rates next week. But, on the other hand, the Hardware jobbers and those who handle large lines of small goods of a staple character are profiting temporarily at least from precisely the same cause. In their case, however, they find their customers purchasing largely to get the advantage of low freight rates, and also to get a stock of goods on hand in case of a general suspension of railroad traffic, when they would not be able to get any supplies.

Pig Iron.—Some good sales have been made during the past two weeks, both of Coke and Charcoal Iron, but the market has not been active, although some commission houses report their business as fairly satisfactory. Prices of Coke Iron are not quotably lower, but the condition of affairs is growing worse by the attempts to make sales by furnacemen who have heretofore refused to "accept the situation," and are now willing to do what is necessary to dispose of accumulated stocks. At the same time, the fact must be noted that some of the best furnaces have succeeded in selling their output up close and are not disposed to discount the future. The rapid reduction in production which has recently been in progress may cause a reaction in the temper of the market before the summer is over, and they will then be in shape to take advantage of a turn for the better if it should come. The decline in price has been altogether too rapid to continue. There are other sellers, however, who are anxious to establish a foundation for business for the latter half of the year, and who are, therefore, willing to shade current quotations on large contracts for such deliveries. Charcoal Iron seems to be taking care of itself. Prices are well maintained and sales are being made. Quotations are as follows, for cash, f.o.b. Chicago: Lake Superior Charcoal, all numbers, $21 @ $22; Alabama Car-Wheel, $25 @ $26; Southern Charcoal Foundry, No. 1, $20 @ $21; Jackson County Softeners, No. 1, $20 @ $20.50; Hocking Valley, Soft Foundry, No. 1, $19.50 @ $20; American Scotch, No. 1, $20.50 @ $21; Lake Superior Coke, all Ore, No. 1, $19 @ $19.50; No. 2, $18 @ $18.50; No. 3, $17 @ $17.50; Cinder Mixed, 50¢ less; Southern Coke, No. 2, $18.50 @ $19; No. 2½ and Open Bright, $18 @ $18.50; No. 3, $17.50 @ $18; No. 1 Mill, $17; No. 2 Mill, $16.50.

Bar Iron.—Small orders are reasonably numerous, but heavy buying is not now in vogue. A few good-sized lots will shortly be needed, and bids are being secured for them, but it is known that whoever is successful must be prepared to go low. The market is in a peculiar condition just now, some mills being firm at the open quotation, while others are weak at an inside figure, which is to be accounted for solely by the condition of their respective order books. Common Iron continues to be quoted on a basis of 1.60¢, half extras, at Mahoning Valley mills, and Guaranteed All Muck Bar at 1.90¢ @ 2¢, f.o.b. Chicago. From store 1.90¢ @ 2.20¢ are the quotations, according to quality and quantity.

Structural Iron.—Bridge orders are scarce, but contracts have been made for a considerable quantity of material for buildings during the past two weeks. The outlook now seems favorable for a brisk business season. Angles are quoted at 2.60¢ and Tees at 3¢, and Beams and Channels, 3.80¢, all from store; Universal Plates, 2.40¢ @ 2.50¢, f.o.b. Chicago, from mill.

Sheet Iron.—Large buyers are already figuring for their supplies for the season, say from June to September, but mills are unwilling to quote for delivery beyond July 1st on account of the annual wages settlement, which takes place at that time and over which there is often a good chance of disagreement. Some good sales for early delivery are reported to manufacturing consumers. Prices are not strong. Carload lots of No. 27 Common Black are quoted at 3¢ @ 3.05¢, f.o.b. Chicago. From store 3.35¢ is asked for No. 27, with a slight concession to best buyers.

Galvanized Iron. — Manufacturers' agents state that if trade continues to maintain its present volume throughout have ever had. The demand for Galvanized Iron has for some time caused manufacturers' prices to be very stiff, and an advance March it will be the heaviest month they would not be a surprise to large buyers. Store sales are made at 60 % off for Juniata, and 60 % and 5 % off for Charcoal.

Plates, &c.—The mills are reported to be holding prices pretty steadily. Local dealers are having a fair volume of trade, demand from store constituting the bulk of the business now being transacted here. Quotations from store are as follows: Heavy Sheets, Nos. 10 to 14, 2.70¢; Tank Iron, 2.60¢ @ 2.70¢; Tank Steel, 2.75¢ @ 3¢; Shell Iron, 3¢; Shell Steel, 3¢ @ 3.25¢; Flange Iron and Steel, 4¢; Fire-Box Steel, 4.75¢ @ 5.75¢; Boiler Rivets, 4¢ @ 4.25¢; Ulster Iron, 3.75¢. Boiler Tubes are weaker and are now quoted at 55 % @ 60 % off, according to size and quantity.

Merchant Steel.—Trade has fallen off quite considerably in some branches, while special makes are having a fair average demand. Quotations are as follows: Bessemer Bars, 2.45¢; Tool Steel, 8½¢ @ 9½¢; Specials, 13¢ @ 25¢; Crucible Spring, 4.25¢; Open-Hearth Spring, 2.90¢; Open-Hearth Machinery, 2.75¢ @ 3¢; Crucible Sheet Steel, 7¢ @ 11¢.

Steel Rails.—Inquiries are reported, but no actual sales have now come to light for several weeks. The condition of the local mills shows the unsatisfactory state of this branch of trade. The Union and Joliet works have not yet been started. The North Chicago Rolling Mill Company's works, at North Chicago, were shut down on the 1st inst., with the exception of one blast furnace, and the South Chicago works of the same company will be shut down on the 1st of April if more orders are not taken in the meantime. The Union and Joliet companies have secured some orders for Rails and will shortly start up their mills, but they have made their repairs in a much more leisurely manner than they would if the demand for Rails was urgent. Under the circumstances competition between the manufacturers is very sharp and prices are nominally weak, but the current quotation is still $34.

Old Rails and Wheels.—Old Rails are scarce in this immediate vicinity, but Southern roads are soliciting bids for considerable quantities. They are quoted nominally at $21, although that price would hardly be paid for a large block. Old Car-Wheels are in limited demand, purchasers offering $20.50, while holders ask $21.

Scrap.—The outlook is a little brighter, as the movement was larger than usual last week. No large sales are reported, but quite a number of small lots

changed hands. Dealers offer $13.50 @ $14 for Mixed Country Scrap. Carefully selected is quoted as follows ₱ ton of 2000 lb: Railroad Shop or No. 1 Forge, $20 @ $21; Track, $19; No. 1 Mill, $15 @ $16; Light Wrought, $9.50 @ $10.50; Machinery Cast, $16 @ $16.50; Stove Plate, $13 @ $13.50; Cast Borings, $10; Wrought Turnings, $12 @ $12.50; Axle Turnings, $14.25 @ $14.50; Coil Steel, $14 @ $15; Leaf Steel, $15.50 @ $16; Locomotive Tires, $16.50 @ $17; Horseshoes, $19.50 @ $20; Axles, $26 @ $26.50.

General Hardware.—The demand for Shelf Hardware has not been so good during the past two weeks as it had been previously. This is simply a comparative statement, as the falling off has not been enough to make business quiet, some jobbers still having more than they can do to keep up with their orders. The demand for Barb Wire and Nails is especially good. They are being hurried forward as fast as possible, both on account of the early advance to be made in freight rates and the fear that after a while a railroad strike may prevent them from being had at all. There is no change in prices, but a decided stiffness is noted in several lines, particularly in Barb Wire and Nails. The demand for Heavy Hardware and Wagon Material is very brisk. Collections are excellent, but the apprehension of further railroad troubles clouds the future.

Nails.—The manufacturers' agents have advanced their rates for Steel Cut Nails in large lots to $2 at Wheeling and Pittsburgh, or $2.15, f.o.b. Chicago. But few sales have been made at the new rate, as the jobbers have fixed the same price on carload lots from their stocks, and they will have the advantage over manufacturers' agents until those stocks are depleted. Small lots are held at $2.25. Wire Nails are in good shape and are reported to be sustained at the advance made two weeks ago. Jobbers quote $2.75 for carloads and $2.85 for small lots.

Barb Wire.—The manufacturers are quoting 3.25¢ for large lots of Painted and 4¢ for Galvanized, and the largest concerns are a month behind their orders. The jobbers, however, are below these figures, naming 3.25¢ for small lots of Painted, with 10¢ off for carloads and ¾¢ advance for Galvanized, although they are having a most excellent demand. They predict an early advance in their prices, unless a general railroad strike interferes, which would cause stock to accumulate in manufacturers' warehouses and weaken their position.

Pig Lead.—Carload lots are quoted at 4.90¢ @ 4.95¢, but business has been dull, consumers declining to anticipate their requirements and awaiting developments.

Chattanooga.

Office of *The Iron Age*, Carter and Ninth Sts., CHATTANOOGA, TENN., March 19, 1888.

The fine weather that has prevailed for the past two or three weeks has seemed to stimulate business in all lines. Building operations are now in full activity, and the only drawback is the want of brick, which, however, will be soon supplied. The Lumber business promises to be of greater volume the coming season than ever before. The continued high tides in the up rivers have caused large quantities of logs to be brought down, which are being utilized in and about this district.

Pig Iron.—The condition of the market is hard to describe. There has been a general decline in prices all along the line in most grades, but there is still a good demand for some particular makes which have established themselves on the market, and the prices of these special brands are still holding up fully, and the demand is still up to the capacity of the furnaces. Prices at which other grades and brands are being sold vary, and depend much upon circumstances and the disposition of the buyer. There have been sales made of the same brand that have varied in price as much as $1.50 ₱ ton, and the only difference is that the Iron goes to different sections of the country. So there appears to be no regular prices to base quotations on. There are grave apprehensions among many of the producers that the troubles on the Western railroad lines will make deliveries so uncertain that it will affect the market in the near future. Taking into consideration many existing circumstances, they have caused much demoralization that is far from being satisfactory, but there appears to be one consolation to our makers, and that is that they deem themselves able to produce Iron as cheap, if not cheaper, than any other section of the United States. As has been previously stated, many of the furnaces are pretty much sold up for the year, so they give themselves little concern for the future. Those that are not sold up have, of course, to skirmish around to find customers, especially for undesirable qualities. None of the new furnaces are yet in blast, the principal impediment being fuel, but the outlook in the future is certainly no stimulant to urge competition just now. There are some elements at work that are anything but encouraging to the Iron producer. An effect of the tariff agitation in Congress looking to a reduction in the tariff on Iron, the disturbances that are occurring in the operations of the railroads, and not knowing at what moment such disturbances may extend all over the country, make those who have their hundreds of thousands at stake feel as though the future was something of an uncertain quantity.

Cincinnati.

Office of *The Iron Age*, Fourth and Main Sts., CINCINNATI, March 19, 1888.

Pig Iron.—The local market for Pig Iron has been less animated during the past week than during the two preceding weeks of the month—in fact, the general report is one of dullness, in marked contrast to the record of the fore part of the month, but there have been spots of activity, and in the aggregate there have been sales of about 5000 tons, which have been well distributed among Southern, Northern and "Lake" furnaces. The Ohio furnaces are gradually working out of the woods, being assisted by the lower prices prevailing for fuel and the decline in rates of some Ore. Upon this new basis they are enabled to compete with better success with Southern stacks. But a number of Southern furnaces are well sold far into the future, several companies being reported unable to book new orders until June or July. Foundry Iron is especially scarce, and the opinion is expressed that it is impossible to fill an order for 500 tons No. 2 Coke Foundry at any price for immediate delivery. Charcoal Foundry Iron is also in light supply. Among the sales during the week have been 2000 tons No. 2 and 2½ Mill, 1800 tons Southern Car Wheel, 1500 tons Lake Superior Iron, all for future delivery. There have also been moderate sales of Silvery Bright and Mixed Iron and 1000 tons No. 2 Coke Iron for summer delivery. Sales which have been previously made and recorded during this month will probably aggregate about 20,000 tons, besides the 17,000 tons reported to have been sold at points west of Cincinnati. From this it is evident that there has been more doing than has been generally believed, but it is the large buyers who have taken advantage of the low prices current, many of the smaller consumers persisting in holding off and expressing confidence in the weakness of the market. Prices current here for cash, f.o.b. cars here, are as follows:

Hot Blast Foundry.	
Ohio Southern Coke, No. 1	$19.00 @ $19.50
Ohio Southern Coke No. 2	17 50 @ 18.00
Ohio Southern Coke, No. 3	17.00 @ 17.50
Ohio Soft Stone Coal, No. 1	19.00 @ 19.50
Ohio Soft Stone Coal, No. 2	18.00 @ 18.50
Mahoning and Shenango Valley	19 00 @ 20.00
Hanging Rock Charcoal, No. 1	22.00 @ 23.00
Hanging Rock Charcoal, No. 2	21.00 @ 23.00
Tennesse and Alabama Charcoal, No. 1	19.50 @ 20.00
Tennessee and Alabama Charcoal, No 2	18.50 @ 19.50
Forge.	
Strong Neutral Coke	16.50 @ 17.00
Mottled Neutral Coke	15.00 @ 15.25
Cold Short	15.50 @ 16.00
Car-Wheel and Malleable Irons.	
Southern Car-Wheel	22.50 @ 24.00
Hanging Rock, Cold Blast	24.00 @ 25.00
Lake Superior Car-Wheel and Malleable	23.00 @ 24.00

Old Rails and Wheels.—There has been a fair inquiry for Wheels but little demand for Rails, and prices have been nominal.

Manufactured Iron.—There has been an improved demand for Bar, Sheet and Architectural Iron from various sources during the week, but a weak tone has prevailed, with prices barely sustained. Bar and Sheet Iron—Common Bar Iron, 1.90¢ @ 2¢; Charcoal Bar Iron, 2.90¢ @ 3¢; Sheet Iron, boiled, Nos. 10 to 27, 2.50¢ @ 3.25¢; Sheet Iron, Charcoal, Nos. 15 to 25, 3½¢ @ 4½¢ ₱ lb.

Nails.—Have been in fair demand and steady; 10 @ 60d sell at $2.20 ₱ keg, and other sizes at proportionate rates. Steel sell at $2.20 and Steel Wire at $2.90 ₱ keg.

Cleveland.

CLEVELAND, March 19, 1888.

Iron Ore.—Over 2,000,000 tons of Ore had been sold before this time last year, but the most diligent inquiry among dealers and furnacemen to-day fails to reveal a single pending negotiation. Not only has no Ore been sold, but there is little prospect of any sales being effected before April 1. Vesselmen ask for charters on a basis of $1.35 ₱ ton transporting Ore from Escanaba to lower lake ports. Furnacemen believe $1 a fair compensation, but would pay $1.10. Buyers also consider $1.50 a sufficiently high rate from Ashland, while the vesselmen look upon $1.80 as the lowest possible rate. A prominent inland furnaceman returns our letter, requesting information regarding the Ore situation, indorsed as follows: "The railroads had ordered over 2,000,000 tons of Steel Rails before March 15 last season. It is doubtful if the orders already placed this year exceed 800,000 tons. The furnaces might as well be banked for the year as to attempt to pay last season's prices for Ore. The demand will not be pressing until the 750,000 tons of Ore, now on dock, has been delivered, and until 200,000 tons of the above amount, still unsold, has been disposed of." It is probable that an effort will be made by the vesselmen and mine owners within the next ten days to fix upon a schedule of lake freights. From a very reliable source it has been ascertained that the following will be the selling prices for Ores at the beginning of the season:

No. 1 Specular and Magnetic Ores, Bessemer quality	$6.25 @ $6.50
No. 1 Specular and Magnetic Ores, Non-Bessemer quality	5.50 @ 5.75
Red Hematite Ores, Bessemer quality	5.35 @ 5.60
Red Hematite Ores, Non-Bessemer quality	4.75 @ 5.00
Menominee Range Ores, Bessemer quality	5.25 @ 5.50
Menominee Range Ores, Non-Bessemer quality	4.25 @ 4.50
Gogebic Range Ores, Bessemer quality	5.25 @ 5.50
Ores for mill use	5.75 @ 6.50

The above quotations are 50¢ ₱ ton below the schedule prevailing last year. The reduction is warranted by the voluntary offer

of the railroad companies carrying Ore from the mines to the upper lake ports to cut freight rates from 10 to 20 ¢, and by the reasonable certainty that the mines can be operated less expensively than for the past year or two. Furnacemen generally anticipate still further reductions.

Pig Iron.—Indications are not wanting of an improvement in the market. No reports of cutting prices have been received for ten days, and cash offers for Iron below present quotations have been refused. There is an absence of life, but dealers talk hopefully. The representative of one firm returned after a week's absence on the road with nine orders, aggregating less than 400 tons. Many manufacturers are urging forward the movement in favor of lower railroad freights. Following are f.o.b. cash quotations:

Nos. 1 to 6 Lake Superior Charcoal	$21.50 @ $22.00
No. 1 Strong Foundry, Bessemer quality, ₽ ton	18.50 @ 19.00
No. 1 Strong Foundry, ₽ ton	18 00 @ 19.00
No. 2 Strong Foundry, ₽ ton	17 00 @ 18.00
No. 1 American Scotch, ₽ ton	18.85 @ 19.35
No. 2 American Scotch, ₽ ton	17 35 @ 17.85
No Soft Silvery, ₽ ton	18.50 @ 19.50
Mahoning and Shenango Valley Neutral Mill Irons, ₽ ton	@ 16.35

Manufactured Iron.—Business is certainly improving, and quotations for Bar Iron remain at 1.70¢, a fact that induces dealers to believe that bed rock has been reached. Prices for all numbers in Sheet Irons are based upon quotations of $2.70 for No. 24.

Old Rails.—It is authoritatively announced that 500 tons of Old American Rails were purchased during the past week for $22.40 ₽ ton. Old Wheels have been sold in small quantities at $20.50, and No. 1 Scrap at $19. Select Axles are quoted at $25.

Nails.—Selling prices have advanced 10¢ ₽ keg for Iron and Steel Nails. Steel Wire Nails are selling at $2.75, 60 days, 2 ¢ off for cash.

Louisville.

LOUISVILLE, KY., March 19, 1888.

Pig Iron.—The market is very unsettled and prices are weak. On small lots good brands command the market price, but in case parties desire to sell large quantities, it is almost impossible to obtain the price, as the views between buyer and seller are so far apart. The market has been very quiet here, though a few sales in the neighborhood of 1000 tons each have been effected. Prices for old materials have also declined very much. The prices on Scrap Iron, which are generally fixed by one of the large mills here, have been cut repeatedly, and yet on each occasion the quantities have been increased, showing that the falling price only stimulated holders to get rid of Iron as fast as possible. Old Wheels and Rails are also off about $1 a ton.

Southern Coke, No. 1 Foundry	$18.25 @ $19.25
" No. 2 "	17.25 @ 18.25
" No. 2½ "	16.75 @ 17.75
Hanging Rock, Coke, No. 1 Foundry	18.75 @ 19.75
Hanging Rock, Charcoal, No. 1 Foundry	22.25 @ 23.75
Southern Charcoal, No. 1 Foundry	19.25 @ 21.25
Silver Gray, different grades	15.75 @ 16.75
Southern Coke, No. 1 Mill, Neutral	15.75 @ 16.75
" No. 2 " "	15.25 @ 16.25
" No. 1 " Cold Short	15.25 @ 16.25
White and Mottled, different grades	14.75 @ 15.75
Southern Car-Wheel, standard brands	22.75 @ 23.75
Southern Car-Wheel, other brands	19.75 @ 20.75
Hanging Rock, Cold Blast	22.75 @ 24.75
Hanging Rock, Warm Blast	19.75 @ 20.75

Detroit.

WILLIAM F. JARVIS & Co., Pig-Iron merchants, Detroit, report as follows under date of March 19: While the consumption of most grades still continues large, yet we are compelled to report a continued dullness and very few sales of any magnitude. The policy of buying only for immediate wants is still pursued by the majority of consumers, and in many cases stocks are allowed to run so low that when an order is given the request is made that car tracer follow the shipment. Coke Irons have been offered in this market recently at lower figures than at any time this year. The price of Coke having been reduced to $1.25 at the ovens, the Northern Coke furnaces are that much better prepared to compete with those in the South, but the freight from the South has been reduced 10¢ ₽ ton, so that by the assistance of the railroads they are again placed in almost the same relative position. The Northern furnaces are trying to secure some reduction in freights, but the Northern railroads so far have refused to come to their relief. We quote the market to-day as follows:

Lake Superior Charcoal, all numbers	$21.00 @ $21.50
Lake Superior Coke, All Ore	20.50 @ 21.50
Lake Superior Coke, Cinder Mixed	19.00 @ 19.75
Standard Ohio Blackband	21.00 @ 21.50
Southern No. 2	19.00 @ 19.75
Southern Silvery	18.50 @ 19.00
Jackson County, Ohio, Silvery	20.50 @ 21.50
American Old Iron Rails	24.00 @ 26.00
Old Wheels	21.50 @ 22.00

Imports.

The imports of Iron and Steel, Hardware, &c., at this port from March 6 to March 16, inclusive, and from January 1 to March 16, inclusive, were as follows:

Iron and Steel.

	March 6 to March 16. Tons.	Jan. 1 to March 16. Tons.
Pig Iron: Crocker Bros	500	2,300
Jas. Williamson & Co	500	1,500
A. Milne & Co	739	754
Geo. W. Stetson & Co	600	4,000
N. S. Bartlett	100	1,400
R. Crooks & Co	100	700
Spiegeleisen: J. A. Jansen	590	8,122
C. L. Pierson & Co	35	35
Geisenheimer & Co	20	105
Crocker Bros	10	356
Steel: W. F. Wagner	65	301
Cary & Moen	32	64
R. F. Downing & Co	32	73
R. H. Wolff & Co	27	145
F. S. Pilditch	22	72
M. Cohn	20	76
Naylor & Co	19	19
Shotts Iron Co	15	15
Dana & Co	10	10
J. Abbott & Co	7	321
C. S. Mersick & Co	4	7
Newton & S	4	42
Chas. Hugill	4	61
C. F. Baker	4	23
C. W. Power	3	13
Wetherall & Co	2	2
Temple & Lockwood	2	3
Steel Rods: Naylor & Co	982	3,694
R. H. Wolff & Co	360	1,145
S. A. Galpin	250	1,104
A. Heyn	160	561
J. Abbott & Co	94	1,525
Cary & Moen	62	254
A. Milne & Co	5	940
Montgomery & Co	3	38
Iron: J. Abbott & Co	120	731
E. G. Jacobus	13	13
J. G. Wilso	7	7
Steel Plates: Jas. Arkell	7	7
Steel Billets: A. Milne & Co	20	258
Phœnix H. Steel Co	20	20
J. Abbott & Co	10	110
Steel Sheets: Naylor & Co	42	154
Lalance & G. Mfg. Co	40	142
Ogden & Wallace	32	32
Pierson & Co	27	211
R. Crooks & Co	26	43
C. S. Mersick & Co	15	37
M. Strouse & Co	7	7
Hondolette & D	4	4
Steel Forgings: Thos. Prosser & Co	151	1,167
Steel Tubes: J. S. Leng	4	18
Rivet Rods: J. Abbott & Co	100	381
Dana & Co	50	50
Iron Rivet Rods: J. Abbott & Co	331	331
Sheet Iron: T. B. Coddington & Co	42	359
Iron Pipes: J. S. Leng & Co	3	3
Iron Girders: R. F. Downing & Co	25	160
Iron Hoops: J. S. Leng & Co	100	100

Tin Plates.

	Boxes.	Boxes.
Phelps, Dodge & Co	16,400	96,150
T. B. Coddington & Co	7,311	35,095
Dickerson, Van Duzen & Co	7,252	59,134
A. A. Thomsen & Co	4,467	33,795
Pratt Mfg. Company	3,950	37,859
N. L. Cort & Co	3,381	28,936
Jas. Byrne & Son	2,600	8,733
Bruce & Cook	2,323	14,737
Central Stamping Company	2,292	3,755
Naylor & Co	2,271	19 126
Hy. Whittemore & Co	1,887	10,050
Wolf & Roesing	1,194	2,594
R. Crooks & Co	1,125	15 819
Merchant & Co	500	2,055
Lombard, Ayres & Co	500	500
Consolidated F. Jar Company	412	887
Corbiere, Fellows & S	248	248
S. Shepard & Co	176	892
American Metal Company	13	141

Metals.

	Pounds.	Pounds.
Tin: J. Abbott & Co	1,338,735	3,953,672
Phelps, Dodge & Co	385,671	486,844
Naylor & Co	45,042	326,059
Hendricks Bros	11,469	191,946
Nickel: McCoy & Sanders	10,000	40,680
Spelter: Naylor & Co	55,175	55,175
	Casks.	Casks.
Antimony: Edw. Hill's Sons & Co	125	575
Hendricks Bros	34	68
Phelps, Dodge & Co	30	250

Hardware, Machinery, &c.

Boyle & Lyles, Oil Stoves, cs., 15
Boker, C. F., Mdse., cs., 2
Crabb, Wm. & Co., Mach'y, case, 1
Clark, G. A. & Bro., Mach'y, cs., 58
Conger, Lewis, Knife Cleaners, cs., 6
Duncan's Sons, John, Oil Stoves, cs., 50
Field, Alfred, Chain, cks., 2; Hdw., cks., 3; ditto, cs., 6
Frank Bros. Fruit Company, Mach'y, case, 1
Graef Cutlery Co., Cutlery, cs., 7; Hdw., case, 1
Junge, F. W. & Co., Mach'y, pkgs., 160
Kastor, A., Mdse., cs., 9
Korting Gas Engine Company, Mach'y, cs., 10
Middleton & Co., Hdw., box, 1
Miller, Morrison & Co., Hdw., cs., 8
Morris, L. W. & Son, Iron work, pkgs., 8
Shattuck & Binger, Nails, bags, 505
Steinhardt & Bro., Hdw., cs., 3
Strauss, Blumenthal & Co., Hdw., cs., 8
Taylor, Thos., Hdw., cs., 8
Underhill, Cinch & Co., Hdw., cks., 3
Van Nest, A. R. & Co., Hdw., cs., 2
Ward, Asline, Cutlery, case, 1
Wiebusch & Hilger, Limited, Anvils, 409; Hdw., pkgs., 3
Wittemann Bros., Filtering Machines, cs., 8
Order: Hdw. and Tubes, cs., 26

Irons and Metals Warehoused from March 6 to March 16, inclusive:

	Tons.
Iron Rods: N. Lilienberg	100
Scrap Iron: Purdon & W	76
	Casks.
Antimony: American Metal Company	120
Edw. Hills Sons & Co	75

Exports of Metals.

	March 6 to March 16. Pounds.	Jan. 1 to March 16. Pounds.
Copper: J. Abbott & Co		3,515,359
Lewisohn Bros	940,615	2 697,399
F. A. Lomal	75,275	2,581.293
American Metal Co	5[illegible],000	4,459,357
G. H. Nichols		111,116
J. Bruce Ismay		112,000
S. Mendel		560,000
Ledoux & Co		2,100
Phelps, Dodge & Co		230 664
Muller, Schall & Co		225,000
Copper Queen Con. M. Co		224,034
J. Kennedy, Tod & Co		112.026
H. Becker & Co		1,250
Orford C. & S. Rfg. Co		224.881
Robt. M. Thompson		125,000
Thos. J. Pope, Sons & Co		115,000
J. Parsons & Co		67,500
Bridgeport Copper Co	112,000	112,000
Copper Matte: Williams & Terhune	522,630	13,899,458
Lewisohn Bros		2,554,980
American Metal Company	135,510	519,485
J. Abbot & Co		295,000
C. Ledoux & Co		386,520
F. W. J. Hurst		184,288

Metal Market.

Copper.—When the week under review opened the Atlantic cables brought us, on Thursday, no London quotations, in the absence of which our market remained dull and nominal at 16.10¢, spot. On Friday, spot Chili Bars were cabled £80. 7/6, and futures £79. 15/, with sales of 275 tons, sales here amounting to 250,000 lb April at 16.15¢, with a steady feeling. On Monday the London quotation came £80. 17/6, spot, and £79. 10/, futures, with 275 tons sold, while here the market weakened to 16.05¢, spot, with very little transpiring in the way of sales—*i. e.*, 50,000 lb, March, at 16.15¢, and 125,000 lb, May, at 16.20¢ @ 16.30¢. The Spanish Government has issued a decree reducing open air calcination at Huelva 25 ¢, to date from January 1, 1889, 50 ¢ from January 1, 1890, and prohibiting the same altogether from January 1, 1891, forward. By way of compensation it is proposed to extend to the Copper companies some fiscal reductions and facilities subject to approval by the Cortes. During 1887 Pyrites exportation from Spain reached 766,801 tons, against 671,897 in 1886 and 785,892 in 1885; the export of Pre-

cipitate was 29,890 tons, against 27,003 in 1886 and 26,924 in 1885. The export of Ingot Copper from the United States during the first seven months of the fiscal year has been 10,321,248 lb, against 12,300,717 in 1887. Rio Tinto shares improved 14 francs at Paris on Monday. Although yesterday Chili Bar futures came 5/ better, with sales of 150 tons, our market developed weakness, spot declining to 16¢ and May to 16.10¢. The market to-day, Wednesday, was dull, the principal seller being the alleged representative of the Dennison mines, of Boston. The situation here is little changed. A certain short interest remains uncovered, while the majority of the large dealers in this city are still carrying the bulk of the actual Copper bought from 16¼¢ down to 16¢. Consumers are buying little in this market. They seem to be supplied by some of the Lake companies and are apparently obtaining, too, considerable Arizona and other Copper from local refineries. From England comes the report that the syndicate has made an arrangement with the English smelters who will have the option of taking whatever furnace material they may require at a fixed margin below the price of refined Copper, the latter to be fixed by the smelters and the syndicate acting together. Accordingly, best smelted Ingot has been put at £80. Here there is no news of consequence. The reports in regard to the Calumet and Hecla fire continue favorable, the temperature being stated to be falling. Outsiders express the opinion that the fire is out. Exports are moderate now. For the period from January 1 to March 16 the exports of Ingot were 12,651,749 lb; of Matte and Ore; 7986 gross tons, equivalent, roughly, to 11,000,000 lb Fine. The market closes with spot Lake at 16¢, May at 16.10¢ and June 16¢. London cabled this morning £80. 17/6 for Chili Bars and £79. 15/ for three months futures. Casting brands are scarce in this market. We quote 15.25¢ @ 15.50¢

Tin.—The market has declined here during the week, the fall being ascribed both to bear operations for the account of Strauss, of London, and to realizing by the syndicate, the aggregate sales here for the week being about 200 tons. March Tin sold down from 35.70¢ to 35.45¢, April from 32.65¢ up to 33¢, and down again to 32.60¢ to-day, May selling on Tuesday at 30.80¢, while June fetched 30.25¢. In London spot remained at £166 for the greater part of the week, closing £166. 2/6.; while Futures, opening on Thursday last at £135, rose up to £138, to close at £137. At the close here 33.35¢ is bid and 33.50¢ asked for March, 32.65¢ @ 32.80¢ for April, and 30.25¢ @ 30.35¢ for June. The Banca sale went off at £94. 3/8. *Tin Plates.*—The embargo laid upon trade by last week's snow storm has been raised, and, as a natural result, business shows a somewhat increased activity for the time being. The reaction, however, is likely to cease so soon as immediate demand is supplied, and then trade will resume its accustomed course. With this exception there is nothing new to note in the Tin-Plate market. Prices are as they have been, though a weakening tendency is noticeable, which is not easily accounted for in the face of the light stocks held here at present. The spring trade in Ternes is still in the future, but will open up with the commencement of building operations. It is remarked that spot transactions bear a larger ratio than usual to the total volume of business. We repeat last week's quotations for large lots in New York as follows: Siemens-Martin Steel, Charcoal finish, $5.10 @ $5.30; ditto, Coke finish, $4.90 @ $5; Ternes, $4.20 @ $4.30; Bessemer Coke, $4.70 @ $4.75, and Wasters, $4.62½.

Lead.—There has been a moderate amount of speculative interest in this metal during the week, upward of 1000 tons being traded in at the Exchange. Consumers, however, have bought sparingly during the past week. The market closes with transactions at 5.15¢ for April and May.

Spelter.—The market is weak and dull, with spot at 5¢ @ 5.10¢ for Common Domestic.

New York Metal Exchange.

The following sales are reported:

THURSDAY, March 15.

64 tons Lead, April	5.10¢
16 tons Lead, April	5.07½¢
16 tons Lead, April	5.10¢
48 tons Lead, May	5.12½¢
100 tons Lead, October	5.12½¢

FRIDAY, March 6.

50,000 lb Copper, March	16.10¢
150 tons Lead, May	5.10¢
10 tons Tin, April	32.55¢
20 tons Tin, April	32.65¢
20 tons Tin, March	35.70¢
250,000 lb Copper, April	16.15¢
48 tons Lead, April	5.10¢
100 tons Lead, April	5⅛¢

SATURDAY, March 17.

30 tons Lead, March	5⅛¢

MONDAY, March 19.

25,000 lb Copper, May	16 25¢
50,000 lb Copper, March	16.15¢
50,000 lb Copper, May	16.25¢
25,000 lb Copper, May	16 20¢
64 tons Lead, March	5.12½¢
32 tons Lead, April	5.15¢
25 tons Tin, April	33¢
25,000 lb Copper, May	16.30¢

TUESDAY, March 20.

20 tons Tin, April	32.80¢
10 tons Tin, April	32.90¢
10 tons Tin, May	31.00¢
20 tons Tin, May	30.90¢
40 tons Tin, June	30.25¢
100 tons Lead, April	5.15¢
10 tons Tin, March	35.50¢
10 tons Tin, March	35.45¢
100,000 lb Copper, May	16.10¢
10 tons Tin, May	30.80¢

WEDNESDAY, March 21.

25,000 lb Copper, June	16¢
25,000 lb Copper, May	16.10¢
10 tons Tin, April	32.60¢
00 tons Lead, April	5.15¢
25,000 lb Copper, July	16 00¢
100,000 lb Copper, Spot	16.00¢
100 tons Lead, May	5.15¢

Coal Market.

The Anthracite Coal market is dull and weak despite a heavily reduced output at the mines and interrupted transportation. Hesitancy in buying is attributed to the pending negotiations respecting railway tolls, and it is surmised on the part of some that in the final settlement as to tolls and allotment prices may sag below the schedule agreed upon by the six companies in their spring circulars—viz., Wyoming free burning, f.o.b. at South Amboy and Weehawken, Broken or Grate, $3.75; Egg, $4; Stove and Chestnut, $4.25. Reading Hard White Ash, at Port Elizabeth, Lump and Steamboat, $4.50; Broken, $4; Egg, $4.10; Stove, $4.25; Chestnut, $4.15; Pea, $3. Free Burning White Ash is the same, except Broken, $3.75, and Egg, $4. In fancy Coals, Lykens Valley is: Broken, $4.75; Egg and Chestnut, $5.25; Stove, $5.50. Schuylkill Red Ash, is: Egg, $4.25; Chestnut, do.; Stove, $4.75.

The Anthracite Coal freight agents of the Reading, Lehigh Valley and Pennsylvania Railroads, the Central Railroad of New Jersey and the Lehigh Coal and Navigation Company held a meeting at the office of the Pennsylvania Railroad on Tuesday. The action of the Lehigh Valley Railroad in anticipating the reduction of 20¢ ₱ ton in the tolls on Anthracite to tidewater at New York harbor was discussed, and it is understood that the other Coal carrying companies will meet the reduced rate on April 1. The new rate was fixed at $1.70 from the Lehigh, Beaver Meadow and Mahanoy mines and $1.80 from the collieries in the Wyoming district. An adjourned meeting will be held on Monday next.

The Anthracite Coal production for the week indicates the effects of the snow embargo, the total from all the mines having dropped to 323,695 tons, as compared with 670,709 tons for the corresponding week in 1887. Wyoming again leads with 200,000 tons, Skuylkill contributes 92,500 tons and Lehigh only 31,191 tons. Since January 1 the aggregate is 6,272,430 tons, against 6,729,604 for the same time in 1887; decrease 457,174 tons. The Reading Company are reported to have nearly all of their collieries actively working again. In the Lehigh region a general resumption of mining was deferred until Monday, on account of the storm. The accumulation of Anthracite Coal at tidewater shipping points has been increasing gradually since February 1st, though the total stock on March 1st was only 250,000 tons.

The Reading Railroad reports that its Coal shipment during the week ending March 17 was 77,500 tons, of which 21,000 tons were sent to Port Richmond and 7000 tons to Elizabethport. Vessels are reported in fair supply at Port Richmond, and freights are quoted at $1.05 and discharge to Boston. The freights from the Coal shipping ports in New York harbor are quoted at 90¢ @ $1.05 and discharge to Boston.

Bituminous Coal in the local market is dull and weak. Shipments from the Cumberland region for the week ending March 10 were 79,205 tons, and for the year to that date, 601,554 tons, an increase of 53,757 tons as compared with the corresponding period of 1887. The shipments of Pocahontas Coal for the year to March 10 increased 72,979 tons, and Beech Creek 121,652 tons.

The building of the connection between the Easton and Amboy and the Jersey Central, and with the Lehigh Coal and Navigation Company's new road from Wilkesbarre to Scranton, indicates a close alliance between those companies and an improvement in their status as Coal carriers. Together they wholly control the Lehigh region proper and a great deal of outside Coal in the Schuylkill and Wyoming regions.

Two difficulties must always be encountered in connection with the use of pulverized coal as fuel. One is the need of using an enormous excess of air in the blast which is required to carry the powdered coal into and through the heating chamber, thus unavoidably cooling it and producing in it a cutting or wasting flame. The other is, that however perfect may be the combustion of the inflammable particles of this "mechanical gas," there must still remain the ash particles which, however minute, are incombustible and are distributed broadcast over the contents of the furnace, usually to a great disadvantage. If to these two obstacles be added a third, the cost of pulverizing the coal, and a fourth, the difficulty of making the powder impalpable at any cost, a sum total is easily reached which has so far effectively prevented any commercial success in this method of using coal.

The absorption of the Erie Express Company by the Wells-Fargo Express Company gives to the consolidated concern the control of all the business west of the Mississippi and all the business between Chicago and Eastern points.

The new cars that are being made to run by stored electricity on the Fourth avenue line, in this city, will hold several more persons than the present ones, and will be heated and lighted, as well as run, by electricity.

Hardware.

Trade in this market is somewhat affected by the recent storm, orders being held back and there being some delay in the receipt of goods shipped to the city. The reports from the Western part of the State, and from the market at large indicate a good condition of things, and the opening of the spring is expected to bring an excellent business.

BARB WIRE.

Manufacturers report that they are well supplied with orders for some time to come, the spring trade having set in with a volume beyond the expectations of the producers. We quote 4 to 4.10 cents for carload lots of Four-Point Galvanized Barb Wire.

NAILS.

The New York market is quiet, with manufacturers' agents holding carload lots of Iron Nails at $2 and store lots at $2.10 The embargo in business is likely to have a comparatively larger influence on this department of trade, since building in the country will probably be stopped for awhile longer.

WIRE NAILS.

The market has not materially changed since our last report, the manufacturers holding the goods at somewhat higher prices than have recently prevailed. Conferences have been held with reference to the adoption of some measures to secure more remunerative prices, but nothing has been accomplished as yet in this direction. The price for carload lots remains $2.55 to $2.60 at factory. The price for small lots from store is $2.75 to $2.90.

MISCELLANEOUS PRICES.

The market for Carriage Bolts is still characterized by continued firmness. There is more uniformity in price than there has recently been, as the goods purchased at low figures are pretty well exhausted, and the manufacturers are beginning to reap the benefit of the prevailing prices.

Strap and T-Hinges are without material improvement, but it is intimated that some of the manufacturers are disposed to recede from some of the extreme prices recently made It is understood that Oliver Bros. & Phillips, Pittsburgh, Pa., are about to resume the manufacture of this line of goods.

It will be seen that the Boston and Lockport Block Company, in their advertisement on page 76, illustrate their Lockport Improved Wagon Jack, which has heretofore been known to the trade as the Meeker. This article is made entirely of metal, except the handle. The tube is wrought-iron pipe, the lifting-rod steel and the castings gray iron. The steel lifting-rod is adjustable in hight and is held by a friction clutch operated by a powerful compound lever. This Wagon Jack is sold from the following list, which is subject to a discount of 40 per cent.:

	Diameter Lifting Rod, in.	Weight, pounds.	Capacity pounds.	Retail Price.
No. 1. For Threshers, Portable Engines, &c.	1¼	35	3,500	$5.00
No. 2. For Heavy Trucks, &c	1	20	2,500	2.50
No. 3. Regular size for Farm Wagons, &c.	¾	10	1,200	1 50
No. 4. For Carriages and Light Wagons	½	7	800	1.25

The prices of Rope, Manila and Sisal, are unaltered, the market being characterized by a firm tone, owing especially to the price of the raw material, which is referred to as likely to be maintained. No intimation is given of an immediate change in the price of the Rope, but if any should occur it is probable that it will be an advance.

The Buffalo Adjustable Double Mincing Knife which is put on the market by Sidney Shepard & Co., Buffalo, N. Y., and C. Sidney Shepard & Co., Chicago, Ill., is quoted at $3 per dozen, subject to a discount of 25 per cent.

The following are the prices of the Stover Mfg. Co., Freeport, Ill., for their Ideal Spring Hinges, a description of which we recently gave, 60 days, with a discount of 2 per cent. in 10 days:

	Per gross.
No. 1, Ideal Lock-Back Hinge	$14
No. 2, Ideal Let-Down Hinge	13
No. 3, Ideal Plain Hinge	12

STANDARD NUT LIST.

We print on the accompanying sheet the standard association lists of Nuts arranged in form for convenient use and reference, giving as it does the prices of Square and Hexagon Nuts, Hot Pressed and Cold Punched, with the dimensions according to the manufacturers' standard, and giving also the United States standard list for Hot Pressed, Cold Punched and Chamfered, Trimmed and Drilled Nuts, both Square and Hexagon, with the regular extras for Tapping. For this convenient and comprehensive table containing matter which has never before been presented in this form to the trade we are indebted to the Henry B. Newhall Company, 105 Chambers street, New York. We give it on a separate sheet, printed on only one side, that those who desire to detach it for use in the office or store may readily do so. This list is subject to an abatement of 5 cents per pound, the extra charge for tapping being subject to a discount of 25 per cent.

TRADE TOPICS.

We are glad to lay before our readers the following letter from William J. Ladd, author of Ladd's Discount Book. It will be seen that in it Mr. Ladd explains the manner in which the Discount Book can be used for adding percentages, thus indicating another way in which it may be made serviceable to the merchant:

In my page of explanation to Ladd's Discount Book I called attention to the fact that the discount tables could be used also for adding percentage, and I gave therein some instances where it could be seen plainly. The few instances given in that table have called forth so many inquiries for other percentages that I would like to show how, in another way, the Discount Book may be used for adding any required per cent. upon all amounts. One example will suffice to show it. To add 62½ per cent.: Find the table where the net of 100 is 62.50, and this is most quickly done by finding the other part of 100; take 62½ from 100 leaves 37½; therefore, turn to 37½ per cent. discount. Now, by adding the gross and the net together in this table you have the per cent. added, as follows: Add 62½ per cent. to $34—look at 34 in the heavy type and add to it the light type, which is the 62½ per cent. of $34—thus: 34 + 21.25 = 55.25, showing the result of $34, with 62½ per cent. added, to be $55.25. If the sum was dollars and cents—say $34.31—of course the 31 cents, with the percentage added, which the table shows to be 31 + 19 = 50 cents, should be included, making the answer $55.75. This being the case with one percentage the same rule applies to all. The Discount Book was not designed to add percentage (I have a book—"Per Cent. Profit"—especially designed for that purpose), but the decimal system, upon which it is based, allows so great a range with figures that adding percentage is only another one of the many ways in which Ladd's Discount Book can be used.

ITEMS.

Announcement is made by B. F. Dunham, Andrew Carrigan and Brace Hayden that the firm of Dunham, Carrigan & Co., San Francisco., Cal., and 107 Chambers street, New York, has been dissolved, and that the business will be continued as in the past and without any interruption by Dunham, Carrigan & Hayden Company. This house have just issued an illustrated catalogue and price list of more than 600 pages, in which is represented a large assortment of Builders' and Heavy Hardware, Machinists' and Mining Supplies, Pipe, Pipe Fittings, Iron and Steel, &c. The catalogue has evidently been compiled with especial care, attention being given to the classification of the goods and their satisfactory arrangement and display. A pleasant effect is produced by the color of the ink, which is blue-black, giving an excellent display of the cuts, while for the list and reading matter it has the effect and clearness of black ink. The delicacy of the color and lightness of the type with which the firm name is printed on each page is also to be noticed, as in this way the legibility of the printed matter is not in the least obscured. The index is very complete, and occupies nearly 30 double-column pages. We take pleasure in noticing this catalogue as an evidence of the enterprise of the long-established house which issues it, and as being by far the most complete which has been published by any on the Pacific Coast.

R. H. Dana & Co., 25 Beaver street, New York, have been appointed export agents by the F. F. Adams Company, Erie, Pa. Another well-known concern is thus added to the list of those who are represented by this house to the export trade.

S. D. Kimbark, Chicago, Ill., the extensive manufacturer and jobber of Carriage and Wagon Materials, has just issued an exceedingly complete and elegant catalogue of Carriage and Wagon Hardware, Trimmings and Mountings. The book consists of over 500 pages with fine illustrations representing standard goods with many of the newest articles in this line, and contains lists and full information which will be of service to the trade. Mr. Kimbark charges $2 per copy for the catalogue, which amount is rebated to the customer when his purchases have reached $500 in 12 months. This house also have in press a complete catalogue of their manufacturing department, covering a line of fine Bodies and Seats, Guards, Carriage Parts, and completely ironed Vehicles in the white, which will illustrate the latest styles in these goods.

The trade will observe the Special Notice on page 45, in which the Hall & Willis Hardware Company, Kansas City, Mo., announce that they have decided to increase their capital with a view to the further extension of their business, and that for this purpose they are ready to negotiate with an experienced Hardwareman who can contribute the requisite capital and take an active part in the business. This opportunity deserves the attention of those desiring such an opening in a trade center of growing importance.

Clark, Quien & Morse, Peoria, Ill., have issued in their usual neat and convenient form their spring catalogue for the present year. It opens with an exhibit of Withington & Cooley Mfg. Company's Steel goods, which are followed by Hay Knives, Scythes, &c. Among the leading lines to which the pamphlet refers are Spades, Shovels, Picks and Mattocks, Scales, Lawn Mowers, Curry Combs, Refrigerators and Vapor Stoves, many specialties and minor lines being also represented.

The Lufkin Rule Company, Cleveland, Ohio, issue their price list No. 3 relating to Hardened Steel Rules. In their circular to the trade they state that they are adding

STANDARD NUT LIST.

JANUARY 1, 1888.

The Iron Age, March 22, 1888.

MANUFACTURERS' SIZES.								U. S. STANDARD SIZES.							TAPPING EXTRA.	
DIMENSIONS.				SQUARE.		HEXAGON.			SQUARE.			HEXAGON.				
Width.	Thickness.	Hole.	Size of Bolt.	Hot Pressed.	Cold Punched.	Hot Pressed.	Cold Punched.	Size of Bolt.	Hot Pressed.	Cold Punched.	Chamfered, Trim'd and Drill'd.	Hot Pressed.	Cold Punched.	Chamfered, Trim'd and Drill'd.	Square.	Hexagon.
½	¼	7/32	¼	13.	13.8	20.	21.	¼	13.	13.8	20.	20.	21.	27.	6.	9.
⅝	5/16	9/32	5/16	11.5	12.3	16.	17.5	5/16	12.	12.8	18.	18.	19.	24.	4.5	7.
¾	⅜	11/32	⅜	10.	10.8	13.	13.8	⅜	10.5	11.	14.5	14.	14.7	18.5	3.7	6.
⅞	7/16	13/32	7/16	9.	9.3	11.2	11.5	7/16	10.	10.5	14.	13.	13.7	18.	3.	4.5
⅞	½	7/16	½	9.	9.3	11.2	11.5	½	9.	9.3	11.3	11.2	11.5	14	2.5	3.5
1	½	7/16	½	8.7	9.	10.5	11.	..	....	....	....	....	....	....	..	..
1⅛	9/16	½	9/16	8.5	8.8	10.3	10.6	9/16	9.	9.3	11.3	11.2	11.5	14.	2.1	2.8
1⅛	⅝	9/16	⅝	8.5	8.8	10.3	10.6	⅝	8.7	8.9	10.	10.5	10.7	12.5	1.6	2.3
1¼	H⅜	9/16	⅝	8.3	8.5	9.8	10.1	..	....	....	....	....	....	....	..	..
1⅜	H⅜	21/32	¾	8.3	8.5	9.8	10.1	¾	8.4	8.6	9.4	9.9	10.2	10.9	1.3	2.
1½	H⅜	21/32	¾	8.	8.2	9.5	9.7	..	....	....	....	....	....	....	..	..
1⅝	H⅜	25/32	⅞	8.	8.2	9.5	9.7	⅞	8.4	8.6	9.4	9.9	10.2	10.9	1.2	1.8
1¾	⅞	25/32	⅞	8.	8.2	....	....	..	....	....	....	....	....	....	..	..
1¾	H1⅛	⅞	1	8.	8.2	9.5	9.7	1	8.2	8.4	9.2	9.7	10.	10.7	1.2	1.8
2	1	⅞	1	8.	8.2	....	....	..	....	....	....	....	....	....	..	..
2	H1⅛	15/16	1⅛	8.	8.2	9.5	9.7	1⅛	8.2	8.4	9.2	9.7	10.	10.7	1.2	1.8
2¼	1⅛	15/16	1⅛	8.	8.2	....	....	..	....	....	....	....	....	....	..	..
2¼	H1¼	1 1/16	1¼	8.3	8.6	9.8	10.1	1¼	8.4	8.8	9.7	9.9	10 5	11.2	1.5	2.2
2½	1¼	1 1/16	1¼	8.3	8.6	....	....	..	....	....	....	....	....	....	..	..
H2½	H1⅜	1 3/16	1⅜	8.3	8.6	9.8	10.1	1⅜	8.4	8.8	9.7	9.9	10.5	11.2	1.5	2.2
H2¾	H1½	1 5/16	1½	8.8	9.2	10.	10.3	1½	8.8	9.6	10.5	10.3	11.3	12.	1.5	2.2
H3	H1⅝	1 7/16	1⅝	8.8	9.2	10.5	10.9	1⅝	8.8	9.6	10.5	10.3	11.3	12.	2.2	2.7
H3⅛	H1¾	1 9/16	1¾	9.3	9.8	10.5	10.9	1¾	9.3	10.2	11.	10.8	12.1	13.	2.2	2.7
H3⅜	H1⅞	1 11/16	1⅞	9.3	9.8	11.	11.5	1⅞	9.3	10.2	11.	10.8	12.1	13.	2.5	3.2
H3½	2	1 13/16	2	9.3	9.8	11.	11.5	2	9.5	10.6	11.5	11.	12.6	13.5	2.5	3.2
H3⅝	H2⅛	1⅞	2⅛	9.3	....	11.5	....	2⅛	10.	11.	12.	11.5	13.	14.	3.	4.
H3¾	2¼	2	2¼	9.6	....	11.5	....	2¼	10.	11.5	12.	11.5	13.5	14.	3.	4.
H4	2⅜	2⅛	2⅜	9.6	....	11.8	....	..	....	....	....	....	....	....	..	..
H4⅛	2½	2¼	2½	9.8	....	12.1	....	2½	....	....	12.5	....	....	14.5	..	..
H4⅜	2¾	2 7/16	2¾	10.5	....	12.5	....	2¾	....	....	13.	....	....	15.	..	..
H4½	3	2 11/16	3	11.	....	13.	....	3	....	....	13.5	....	....	15.5	..	..

NOTE.—H prefixed indicates the size of Hexagon Nuts, the figures on the line above it being the size of Square.

new numbers so rapidly that any list they issue is soon incomplete. It is also found necessary occasionally to change the list in the old numbers. They will therefore from time to time issue these lists. They refer to the encouragement they have received from the trade on this line of goods, and expect soon to have the most complete and finest line of Steel Rules and Tapes on the market. They intimate that their Steel Tapes will soon be ready.

John Warr, Eureka, Kan., dealer in Hardware Implements, &c., issues a circular relating to some of his leading lines and announcing a series of five premiums which are to be given to his customers. The premiums consist of a tubular axle old hickory farm wagon, worth $100, and other articles decreasing in value to $10. Each cash purchaser of goods at his store amounting to $5 will be entitled to one guess upon the weight of the wagon, and the person guessing nearest to the correct weight, as determined by the judges next September, will be entitled to the wagon itself. The other persons who have guessed nearest to the correct weight will be entitled to other premiums.

William R. Pitt, 92 Chambers street, New York issues a neat pamphlet relating to the Pitt Patent Folding Gates and Window Guards, and also to the Bostwick and other patent Folding Gates and Window Guards. The opening circular alludes to the fact that during the last few years Folding Gates have come into general use owing to their acknowledged merit and usefulness and also to the energy with which they have been brought to public attention. The pamphlet represents styles of Gates made of Iron, Steel, Brass or Bronze and finished in various styles, painted, bronzed, polished and lacquered, nickel-plated, &c.

F. Roloson, Baltimore, Md., has issued a new edition of his catalogue relating to Refrigerators. It describes the different patterns made, especial emphasis being laid on the method of ventilating. A number of references are given from parties who have used or sold the Refrigerators.

The Emerson & Fisher Company, Cincinnati, Ohio, manufacturers of Carriages and Buggies, have issued their catalogue for 1888, which represents a number of standard and attractive styles. In their opening circular they refer to the increased demand for their line of Carriages, alluding also to the improvements which have been made in the vehicles for the coming season.

The Joseph Dixon Crucible Company, Jersey City, N. J., issue a circular relating to Graphite Paint, in which they refer to its adaptation for tin roofs and other uses.

John H. Graham & Co., 113 Chambers street, New York, issue a circular relating to the Lightning Nail Puller, for which they are sole agents. It gives an illustration of the Puller and describes its special features.

Challenge Refrigerator Company, Cincinnati, Ohio, have issued a catalogue devoted to their line of Refrigerators. They refer to the econony of ice in the use of these Refrigerators, and the principal on which they are constructed so as to secure a desirable circulation of dry air.

Geo. B. Curtiss, 95 Chambers street, New York, has been appointed agent by the Ten Eyck Edge Tool Company, Cattaraugus, N. Y., for the sale of their line of Axes and Edge Tools.

The Enterprise Mfg. Company, Philadelphia, Pa., in their advertisement on page 67 give, it will be observed, an extract from the opinion of Judge Shipman, in the suit by them against Sargent & Co. for infringement of their patent, to which we referred in a late issue. From the full text of the decision we observe that the Judge ordered a decree for an accounting, and an injunction against the infringement of the first, second and sixth claims of the plaintiffs' patent.

The Wire Goods Company, Worcester, Mass., announce, March 13, that they have purchased the entire plant, stock and good will of the Ayres Mfg. Company, of that city, and propose to continue the manufacture of all goods in that line. They request that statements of account against the Ayres Mfg. Company be sent to them at once, and state that they shall be glad to receive remittances of amounts due the company at an early date.

Hibbard, Spencer, Bartlett & Co., Chicago, Ill., issue a neat 50-page pamphlet, in which Bird Cages are given the principal place, Refrigerators, Ice Cream Freezers, Water Coolers, &c., being also represented, together with a line of Lemon Squeezers and Ice Tools. They call attention prominently to their Cutlery department, referring especially to their $25 and $50 assortments of Pocket and Table Cutlery.

Biddle Hardware Company, Philadelphia, have issued a spring price current, representing Water Coolers, Refrigerators, Freezers, a variety of Ice Tools, Lemon Squeezers, Agate Ware, Lawn Mowers, Cultivators, Steel and Wood Goods, and a variety of other special and standard lines.

L. S. Starrett, Athol, Mass., has issued his catalogue and price list for 1888, which represents his well-known line, with recent additions, among which are the Micrometer Caliper, Square Universal Bevel Protractor, hardened edge, solid steel Square, new Extension Dividers and a set of improved Trammels. Special attention is also directed to his Quick-Adjusting Spring Nut, which has recently been perfected. Some slight changes in list prices are to be noted.

The A. F. Pike Mfg. Company, Pike Station, N. H., have brought suit, we are informed, against the Cleveland Stone Company, Cleveland, Ohio, for infringing their trade-marks, Indian Pond, Black Diamond, Lamoille, Green Mountain, Willoughby Lake and White Mountain, and have obtained temporary injunctions against them.

Letters received from New Zealand refer to the satisfactory quality and pattern of Knives made by E. S. Hulbert & Co., Bernardston, Mass., and those for hedges are alluded to as in shape just what are needed and the most satisfactory Knives that are imported into New Zealand. The same letter refers to British-made Sheep Shears, and their Cutlery, as like other English Edge Tools, defective in temper and quality. It is said that there is a good opening in that market for Sheep Shears and Cutlery that will meet the requirements of the trade.

Empire Knife Company, West Winsted, Conn., issue a circular calling attention to their Empire Corkscrews, which are wrought from the steel rod under the hammer with their special dies and finished with the latest and most improved machinery. These Corkscrews are referred to as unsurpassed for the uniformity of the screw and for the evenness and smoothness of its cut.

In a readable article concerning traveling salesman, a recent issue of the *World* has the following with reference to a well-known Hardwaremar of this city:

There is a gentleman in this town, Mr. John G. Witte, the king of traveling salesmen, who thinks nothing of telegraphing a new joke, or story, or anecdote, to Oregon or Chihuahua. Mr. Witte, by the way, typifies the best that there is in traveling salesmen. He is at the head of a big Cutlery and Hardware house in Chambers street, and yet he calls himself a drummer. He has been on the road ever since anybody can remember, and on every new trip he starts out with an absolutely original stock of stories and a menagerie. One year he carries a pet squirrel trained to live in his pocket, the next season he proudly shows two performing toads, the third he pins his customers' attentions with a trained alligator, and so on. Mr. Witte is rich, has traveled hundreds of thousands of miles, and is as young in heart to-day as when he started out so long ago that the morning stars had hardly forgotten how to sing together.

The Horton Mfg. Company, Fort Wayne, Ind., issue a descriptive catalogue of their Improved Western Washer, Sliding and Rotary Feed Hand Corn Planters, Ironing Boards and Stands, House Meat Blocks, Lap Boards, Clothes Racks, and other wooden novelties. It is a well printed pamphlet, with illustrations and the requisite decriptive matter.

The Ney Mfg. Company, Canton, Ohio, whose advertisement appears on page 86, issue a neat circular devoted to the Automatic Lawn Rake, and the Lawn King, of their manufacture. The manner in which the first of these Rakes clears itself from the grass without annoyance to the operator is explained.

In their advertisement on page 51, the Queen Anne Screen Company, Burlington, Vt., for whom John H. Graham & Co. are agents, 113 Chambers street, New York, illustrate their Queen Anne Screen, and also their improved Window Screen Frame, the construction of which is indicated in the cut, showing the method by which they are readily adapted to the size of the window.

LAWN MOWERS.

The great increase in the demand for Lawn Mowers during the past few years is one of the features of the trade. To meet this demand not only have the manufacturers who have been longest in the field been increasing their facilities for making the machines, but many new concerns have entered upon their manufacture, and the result is that at the present time a large variety of machines are offered to the trade. We give below in brief the names of the manufacturers, with information in regard to the machines put by them on the market. It is scarcely necessary to say that there is considerable diversity in the prices at which the machines are offered, and presumably in the quality and merit of the machines themselves. The greater part of the trade is held by the old manufacturers, but the new machines have extensive sale.

The Chadborn & Coldwell Mfg. Company, Newburg, N. Y., are manufacturers of the Excelsior Roller Mower, which, as its name indicates, is constructed with a roller. It is made in sizes from 10 to 20 inches. They also make the New Model Mower, a side-wheel machine, which is made regularly in sizes from 10 to 20 inches, there being also a 10-inch machine, Croquet, which is listed at $11, instead of $13, the list price of the regular 10-inch machine. The company also make the Excelsior Horse Lawn Mower in sizes 25, 30, 35 and 40 inch cut. They have given up the manufacture of the cheap second-class Mowers, confining their entire attention to those above alluded to.

Graham, Emlen & Passmore, 631 Market street, Philadelphia, manufacture the Philadelphia Lawn Mowers. Of the hand Lawn Mowers several patterns are made, as follows: Style D, solid wiper, 6½-inch wheels; style M, solid wiper, 7-inch wheels; style S, four-blade riveted steel wiper, 7-inch wheels, and style L, four-blade riveted steel wiper, high wheels. No second quality Mowers are made.

They also manufacture Horse Lawn Mowers, Philadelphia Lawn Sweeper and the Philadelphia Edger.

The Enterprise Mfg. Company, Philadelphia, Pa., have this year entered the market with a new machine which they call the Enterprise. Of this machine a description was given in our issue of January 5, 1888, from which it will be seen that it is a side-wheel machine having a driving-wheel of 7 inches diameter, the handle being made of wrought-iron pipe. The machines are to be made in all sizes from 10 to 18 inches, and now 10, 12 and 15 inch machines are on the market.

The Hanika Iron Fence Company, Springfield, Ohio, are this season furnishing two styles of Mowers, the Hanika and the Combination, both of which are made in the following sizes: 12, 14, 16 and 18 inch, either with or without rollers. The Combination is a lighter machine than the Hanika, the 12 inch Hanika, weighing 34 pounds and the Combination 27 pounds, and the 18-inch Hanika weighing 43 pounds and the Combination 33 pounds.

The Blair Mfg. Company, Springfield, Mass., are putting on the market the New Easy Lawn Mower, which is operated by open roller traction. It is made in the following sizes: 10, 12, 14, 16, 18, 20 and 24 inch, the last being geared at each end. They also make the Bay State, a side-wheel Mower, in sizes from 10 to 18 inches, and the Boston, which is designed to meet the demand for a good durable Mower at a low price and is an adjustable center-cut machine. It is made in sizes from 10 to 16 inch.

Mast, Foos & Co., Springfield, Ohio, are manufacturers of the Buckeye Lawn Mowers, Senior and Junior. The Buckeye Senior is made in sizes from 10 to 18 inch, and the Buckeye Junior in sizes from 10 to 16 inch.

The Lloyd & Supplee Hardware Company, Philadelphia, put on the market a number of Lawn Mowers, including the Pennsylvania, Continental, Keystone, &c. The Pennsylvania machines are the Pennsylvania Hand Mowers, the Quaker City Lawn Mowers and the Pennsylvania Horse Mowers. The list price of the Quaker City Lawn Mowers has been advanced to correspond with the list prices of the Pennsylvania Mowers, an extra discount of 12½ per cent. being given on the Quaker City. The Continental Lawn Mower Company, Philadelphia, Pa., are putting on the market the Continental and the Hudson Lawn Mowers. The Continental Mowers are made in sizes from 10 to 18 inches, and special machines for high grass in sizes 15, 17, 19 and 21 inches. The Hudson Mowers are made in sizes from 10 to 16 inches. The list price has been advanced to correspond with the list price of the Continental Lawn Mowers, an extra discount of 12½ per cent. being given on the Hudson. They also make the Keystone Lawn Mower, a rear-cut machine, furnished either with open or solid wiper.

Newhall & Stebbins, Hinsdale, N. H., for whom E. M. Richardson, Waltham, Mass., is agent, manufacture the Granite State Lawn Mower, which is put on the market this year without modification, except that the machines are furnished with longer handles, and a 12-inch size has been added, making the sizes now furnished 12, 14, 16, 18 and 20 inches.

The Thomas Mfg. Company, Springfield, Ohio, are known to the trade as manufacturers of the Royal Lawn Mower, but since last season they have made extensive improvements in the machine so as to make it practically a new machine, and it is put on the market this season as the Thomas Lawn Mower. The points in it on which emphasis is laid are its light draft and its adaptation for cutting high grass, together with its finish and quality. It has 7-inch wheels and two cutting knives, so that it is claimed that it can wipe under grass 6 to 8 inches high with ease. It is made in sizes 10, 12, 14, 16, 18 and 20 inches.

The Dille & McGuire Mfg. Company, Richmond, Ind., manufacture the Star and Diamond Lawn Mowers, which are of different patterns, the former being made in sizes from 10 to 20 inches, and sold from the high list, while the latter is made in sizes 12, 14 and 16 inches and sold from the low list. The large sizes of the Star are made with two driving-wheels for large lawns and heavy work.

C. W. Cheney, Athol, Mass., is manufacturer of the Cheney Lawn Mower, which has cutting knives similar to power Mowers, instead of the rotary cutting knives of Lawn Mowers generally. The facility with which it will cut grass of any hight is one of the advantages claimed for it, and also the fact that it will cut the grass close up to the wall, fence or tree. It is made in 10, 12, 14 and 16 inch sizes.

The Rogers Fence Company, Springfield, Ohio, are manufacturers of the Superior Lawn Mowers, in which they have made some modification and improvements since last season. The reel knives are protected by a guard, and the Mowers are described as so constructed that they can be adjusted in a moment to cut short or long grass. They are made in sizes, 12, 14 and 16 inches.

The Champion Mfg. Company, Richmond, Ind., are making Rowlett's Champion Lawn Mower, and call attention to improvements made in the machine. This machine is made in 12, 14, 16, 18 and 20 inch sizes.

Hill's Archimedean Lawn Mower Company, Hartford, Conn., one of the oldest manufacturers of Lawn Mowers, having been incorporated in the year 1871, are this season putting on the market the Leader Lawn Mower, a light-weight side-wheel machine. It is made in sizes 12, 14, 16 and 18 inches.

J. W. Bookwalter & Co., Springfield, Ohio, manufacture the Favorite Lawn Mower. It has guards inside each driving wheel extending beyond the circle described by the cutting blades to permit the Mower to be pushed forward against a fence to facilitate the cutting of the grass close to it. It has also an adjustable tree-guard, which, when desired, can be thrown forward to protect trees or shrubbery from injury, and when not needed can be thrown back to lie on the handle. It is made in sizes, 12, 14 and 16 inch.

The Pelican Lawn Clipper, which is intended for trimming the edges of walks, around flowers, bushes, &c., is made by the Tuck Mfg. Company, Brockton, Mass. The list price of the Clipper is $3, the discount to the trade being 20 per cent. The Clippers are packed half dozen in a case.

BUSINESS RULES.

We give below rules adopted by a prominent Hardware house, which embody instructions to their traveling salesmen. They will be of interest as indicating the method approved by the firm, and will probably be suggestive to merchants:

Instructions to Traveling Salesmen.

1. An inventory must be taken of all samples to be carried, and given to person who has supervision of traveling salesmen. Additional samples must be obtained from person in charge of sample room and entered on inventory at time taken. When it shall become necessary for samples to be returned to the house, they must be in good order and all properly accounted for to said person who has supervision of traveling salesmen.

2. Before starting on trips, you will see that your samples are in good condition, and that you are thoroughly posted in prices. You will report to Mr....., or in his absence to Mr....., who will inform you of changes in prices and of goods to be "pushed," and give such other instructions as may be necessary to make you proficient in your work. You will leave with Mr.....a memorandum, showing where you will be from day to day, and should there be any variation from this record, you will promptly notify us and state reason of such change.

3. You will make out for each trip a list of customers you will call upon and hand to credit man, who will give you memoranda of accounts and all necessary instructions relating thereto. He will also supply you with mileage tickets, railroad working tables, stationery and necessary means for traveling expenses.

4. When on the road you will use all due diligence to protect our interests as regards the financial condition of our customers, and advise us promptly (by wire if necessary) when you may think our interests are in any way imperiled or require special attention.

5. It will be required of you that you write us at least once each day, sending either a letter, postal card or order.

6. It is expected that you will adhere to prices given you, and any deviation therefrom must be explained to our satisfaction.

7. You are not permitted to make any rebates or allowances, and all claims for such must be submitted to the house for approval before they can be allowed. Nor should you deviate from the regular established terms of the house, unless by special permission in each instance.

8. When your collections reach or exceed the amount of $200, you will remit either in check, draft or by express all in excess of what may be required to meet your necessary traveling expenses.

9. Immediately after your arrival in the city, on returning from a trip, you will report to our office, unless same is closed, and deposit what funds you may have in your possession; and as soon thereafter as possible you will render to the secretary an itemized account of your traveling expenses and collections made, and also submit to him, in writing, any claims that have been given to you for our investigation.

10. When in the city for a day or longer, you will report to the store as early as 8.30 a. m., take not longer than one hour and a half nooning and remain at the store till 6.30 p. m. unless by permission from Mr..... or the secretary.

11. No goods shall be given away by employees without the consent of manager.

12. Credit and terms must be given by credit man in office, and no goods to be charged must be delivered unless credit has been sanctioned by him.

There is wide diversity of practice in regard to the form of the agreement made by manufacturers and merchants with the travelers who represent them on the road. One firm, well known manufacturers of Hardware specialties, advise us that the contracts with their salesmen embrace the following points:

$..... per month, traveling expenses while on the road, and ..... per cent. on dersonal sales.

We do not learn that the Chicago jobbing houses have any printed regulations governing the movements of their salesmen. In 1881 at a meeting of all the Chicago jobbers, a set of regulations was drawn up for the guidance of salesmen, as to the settlement of claims of customers, reporting cut prices to their respective houses for investigation before meeting them, and various other matters of an associated character, but in the course of time these regulations became a dead letter, and to-day there is no formal agreement of this kind between the respective houses with regard to the actions of their salesmen. Most of the jobbers report their rules as dependant largely on the character of the salesmen, those of known discretion, long experience, and proved sagacity being allowed wider

latitude than others of comparative inexperience, or of recent connection with the house. Each individual receives his instructions, and no attempt is made to impose a set of rigid regulations upon all of the force. In making an investigation upon this point, some interesting facts were developed. The Wells & Nellegar Company have a system of regular communication with their salesmen, by means of which they are able at any time to write or telegraph to them. Each salesman is furnished with a number of postal cards, bearing the printed address of the firm, while on the reverse is the following:

Mail every
Wednesday. 188
Route of.....
Commencing Monday,..... ...

Day.	*In care of*	*Town.*
Mon.		
Tues.		
Wed.		
Thur.		
Fri.		
Sat.		

The salesman each Wednesday takes one of these cards, fills in his name and the necessary dates, and then writes where he will be on each day of the following week and in whose care he can be addressed.

Another matter of considerable importance was ascertained from Horton, Gilmore, McWilliams & Co., successors to Wiliam Blair & Co. In common with other houses they had frequently been annoyed by salesmen collecting or receiving money from customers and having the amount charged to their salary account, causing more or less confusion and needlessly complicating business transactions, while occasionally the amount thus collected or received would be in excess of the salary due. Another source of annoyance in the same direction was the authorization of salesmen to issue drafts on the house for the payment of expenses or salaries, making it possible for a dishonest man to largely overdraw his account, with no recourse whatever for the firm if he suddenly disappeared. For the purpose of preventing such annoyances and possible losses, but without intending any reflection on their salesmen, the firm issued the following special notice to their customers shortly after the reorganization of the house at the beginning of the present year:

In reorganizing the business of the house we have adopted the following rules, which will be strictly adhered to: No person will be required or permitted to collect or receive money from any of our customers, for our account, without written authority from us, nor will we be held responsible under any circumstances for money borrowed or indebtedness created by any person representing himself as our agent. Drafts made upon us by our agents for money will be upon blanks furnished by us, to which will be attached our authority for making the same, and which must accompany the draft. We will not be held responsible for any loss resulting from a violation of these rules. They are deemed necessary for the convenience and protection of our agents and customers, as well as ourselves, and are no reflection on our traveling salesmen, who have our fullest confidence and support.

In order to show the form of the draft which has been adopted by this house in accordance with the foregoing notice, we have secured one of them and herewith present it. The left of the draft is the "stub," which remains in the draft book as a memorandum of the transaction.

These drafts are sent to each salesman at the beginning of each month, or oftener if the necessity arises. A special account book is kept for the purpose of showing the amount to which each salesman is entitled and how much he has drawn. As the draft sent him at the beginning of a month covers the whole sum due him it may name an amount larger than he needs when it is received, hence the words "or less" are inserted. The drafts made out in this form are regarded by banks as regular acceptances, and there is consequently no trouble to the salesman in hunting up indorsers. A draft of any other kind sent in by one of their salesmen is not recognized, but is immediately returned to the party presenting it. The question may arise, Why is this system preferred to that of sending out a check whenever a salesman needs money and has advised the firm of what he wants? It is preferred for a variety of reasons, one of the principal being the danger of a check going astray, in which case the drawing of a second check, if the amount be of some consequence, is decidedly objectionable. Should one of these drafts be lost it would be of much less consequence.

Date. ..... Agent. ..... Amount. ..... Addressed.	*Horton, Gilmore, McWilliams & Co.—Agents Draft.*	Mr..... Chicago,.....188 You are hereby authorized to make a sight draft on us for.....Dollars, or less, and we will pay the same on presentation with this authorization attached. HORTON, GILMORE, McWILLIAMS & Co. ..... $..... .....188 As per authorization attached hereto, pay to the order of..... .....Dollars. Value received and charge the same to account of To HORTON, GILMORE, McWILLIAMS & Co., ... 172, 174 and 176 Lake street, Chicago.

A manufacturing company of Chicago refer to the interest with which they perused the recent article in regard to salesmen's traveling expenses, a term which they allude to as being so elastic that they would be glad to have an expression from those familiar with the matter as to precisely what should be legitimately covered by it.

JUTE CULTURE IN TEXAS.

We have received from R. E. Bell, Weatherford, Tex., a pamphlet on the jute culture in Texas, which is published by the Weatherford Native Jute Rope Mfg. Company, of which the directors are: A. F. Starr, R. H. Foat, R. E. Bell, P. Lavigne, C. D. Hartnett, Geo. P. Levy and J. Juvenet. It is intended to promote the culture of jute, showing how the difficulties of the jute industry are overcome in Texas, and explaining in regard to the nature of the jute, selection of seed, &c., with directions in regard to climate, soil, methods of cultivating, harvesting, &c. The aim of the company is to create a Texas jute market by establishing a factory to manufacture the jute grown in Texas into jute rope. The following extract from the pamphlet will be of interest as bearing upon the production of jute and explaining the plans of the company:

The total quantity of Jute produced yearly in India is estimated at 1,000,000,000 pounds, which represents about half the weight of cotton produced each year on the entire surface of the earth. Jute production comes fourth in the exports of India—only cotton, opium and rice exceed it in commercial importance. Some of the Indian factories are immense. There is an establishment near Calcutta which employs 5000 workmen, and annually manufactures more than 20,000,000 pounds of Jute. The root-fiber, the refuse portion of the plant, and also its wood pulp are converted into smooth, strong, white paper. About 25,000,000 pounds of Jute are made yearly into paper in the United States. The Jute is mixed with cotton, wool, linen and silk. It is a material part of twilled stair-carpeting and low-priced broad-cloth. In combination with other textiles it imitates the gloss of Irish linen, the luster of French silk, the beauty of Turkish rugs, and the splendor of Brussels and Venetian carpets. Single or mixed, it enters into the manufacture of 1000 articles of commerce. Unfortunately, the Weatherford Native Jute Company have not the means of the East India English Company, and will not at once manufacture all the above fabrics. The aim of the company is to create a Texas Jute market of a staple superior to the India Jute, said India Jute being good only for coarse, cheap and inferior bagging. The choicest quality of the native Jute of this year's crop the Weatherford Company intend to sell up North for carpet and rug making. But the greatest part of the crop will be manufactured here into cordage and rope that will be sold all over the State at about 7½ cents a pound, which will be superior in durability and strength to the sisal hemp rope sold now at 12 and 13 cents per pound. The Jute fiber coming from India is deficient in strength. It is caused by the old retting process in use, because the stay of 15 days in water injures the fiber. The process of the Weatherford Company rets or bleaches the Jute in one hour, and improves the fiber, which can then be used for high-priced goods. The Weatherford Native Jute Rope Mfg. Company, believing to have fully explained everything pertaining to the culture of Jute, and making every possible effort to foster said advantageous culture, it is evident that it is now for the farmers to look out to their own interest by a general introduction of the new crop throughout the entire State.

NIMICK & BRITTAN MFG. COMPANY,

Pittsburgh, Pa., for whom John H. Graham & Co. are agents, 113 Chambers street, New York, have just issued a new and handsome catalogue describing their line of Door Locks and Knobs, Padlocks, Builders' Hardware, &c. This catalogue has a broader page than their former issue, its size being 8½ x 10½ inches. It is fully illustrated with excellent cuts, and neatly bound, with red edges. Their regular line of Locks are described on the first 107 pages, after which their Burglar-Proof Locks, to which they call special attention, are illustrated. Among the Lock

furniture, their Rose Escutcheon Knobs are illustrated, a variety of patterns being shown. Their Screwless Door-Knobs are also especially referred to. In this catalogue Locks and Latches are arranged in numerical order, uniform with the price list which accompanies it, and the price list is divided off descriptively, thus enabling one to find the kind of lock, description and price with facility. The system of numbering by which the character of the lock, finish, &c., are indicated, is also explained at length. As for example, Locks terminating with 6 indicate Iron Bolts, Nickel Plated Steel Key, and when more than one tumbler, fractions are added: ¼ for 2 tumblers, ½ for 3 tumblers, &c. The principle on which Bronze Metal goods are numbered is also explained, as well as the manner in which the finish of Iron and Brass goods is designated. The catalogue has evidently been compiled with especial care, a requirement for the convenience of the trade. Their new list No. 8, which refers to this new catalogue, is subject to the following discounts, given in discount sheet No. 9, there being an additional 2 per cent. for prompt cash within 30 days of date of invoice:

	Per cent.
Door Locks, Knobs and Latches	50&10
Burglar-Proof Locks	60
Escutcheons and Keys	50&10
Sash Locks	60
Padlocks and Padlock Keys	65&10
Bell Pulls	50&10
Bell Pulls, Lever	50&10
Bell Push Buttons	50&10
Butts, Loose Pin, Plain Bronze Metal 872	60&5
Butts, Loose Pin, Plain Bronze Metal 882	60&5
Butts, Loose Pin, Figured Bronze Metal	60&5
Butts, Loose Pin, Egyptian Bronzed	60
Butts, Loose Pin, Bronze Plated	60&10
Butts, Loose Joint, Bronze Metal, Oriental	60&5
Butts, Loose Joint, Bronze Metal, Arabesque	60&5
Butts, Parliament, Bronze Metal	60
Butts, Parliament, Egyptian Bronzed	60
Butts, Parliament, Bronze Plated	60
Shutter Hinges, Bronze Metal	60
Shutter Hinges, Egyptian Bronzed	60
Shutter Hinges, Bronze Plated	60
Shutter Flaps, Bronze Metal	60
Shutter Flaps, Egyptian Bronzed	60
Shutter Flaps, Bronze Plated	60
Shutter Bars, Bronze Metal	60&10
Shutter Bars, Egyptian Bronzed	66⅔
Shutter Bars, Bronze Plated	66⅔
Shutter Knobs, Bronze Metal	60&10
Shutter Knobs, Egyptian Bronzed	66⅔
Shutter Knobs, Bronze Plated	66⅔
Flush Bolts, Bronze Metal	50&10
Flush Bolts, Egyptian Bronzed	33⅓
Flush Bolts, Bronze Plated	33⅓
Store Door Handles and Locks, Bronze Metal	50&10
Store Door Handles and Locks, Egyptian Bronzed	50&10
Store Door Handles and Locks, Bronze Plated	50&10
Sash Lifts, Bronze Metal	50&10
Sash Lifts, Egyptian Bronzed	66⅔
Sash Lifts, Bronze Plated	66⅔
Cupboard Catches and Turns, Bronze Metal	60
Cupboard Catches and Turns, Egyptian Bronzed	60&10
Cupboard Catches and Turns, Bronze Plated	60&10
Push Plates, Bronze Metal	50
Letter Box Plates, Bronze Metal	50
Letter Box Plates, Egyptian Bronzed	50
Letter Box Plates, Bronze Plated	50
Drawer Pulls, Bronze Metal	50
Drawer Pulls, Egyptian Bronzed	60
Drawer Pulls, Bronze Plated	30
Barn Door Locks	33⅓
Scales	40
Thumb Latches, Egyptian Bronzed	75
Thumb Latches, Bronze Plated	75
Door Check and Spring	25

With the exception of one blast furnace, the entire plant of the Joliet Steel Company, at Joliet, Ill., has been idle since December last. Preparations are now being made to put the works in operation again, as orders for steel rails have been secured to an extent which will justify the resumption of activity. Extensive repairs and improvements have been made while the works were idle. The water supply had been outgrown, and an aqueduct was constructed capable of handling 21,000,000 gallons of water. The machinery throughout was carefully overhauled and put in shape for heavy production, and it is expected that the coming run will surpass previous achievements. A wire-rod mill is being added to the equipment of the works, and it is expected to be ready for operating in June. Much of the machinery for it is being built in the company's machine shops, and all that must be made outside is under contract. The mill is a Garrett mill, and will be the largest in the country. Billets will be rolled for it on the rail train, which will be diverted to that work whenever it is necessary to provide a stock. In this way they will be produced at minimum cost. The consumption of wire rods in the immediate vicinity of Joliet will absorb a very large part of the capacity of this mill, and it is the intention of the company to so construct it that rods can be produced with the least outlay for labor. Unless competitors have an advantage in cheaper material, the Joliet Steel Company will expect to be able to make rods when prices are at their lowest, as well as when they are high.

Iron Enameled Signs.

We had occasion lately to visit the works built by Mr. E. A. Martin, 157 Alabama avenue, East New York, Brooklyn, for the manufacture of iron enameled signs, of whose connection with the industry we have already taken note in *The Iron Age*. Until now all the signs used are being imported from England, the duty being 45 per cent. ad valorem. The iron sheets as they come from the manufacturer are pickled and scrubbed to remove the scale, and are then punched for the nail holes, flattened under the hammer and sheared to size. The first step in the manufacture is to give these sheets a complete coating on both sides of a light enamel, put on at a high temperature, and intended principally to act as a protector of the iron itself. Two classes of enamel plates are made. The first, a cheaper form, consisting in coating the plates with a background of enamel, and putting on this, in the form of dust, the enamel for the raised letters of the different colors which constitute the wording of the sign. This class of work, being cheaper, is particularly useful for large signs intended more for effect at great distances than delicacy of work. The second class consists in coating the plate with an enamel which is to form the lettering, then applying, wet, the color which is to form the background, and, with the use of stencils, brush away the part of this background which is to be the lettering. This method insures clearer outline and more uniform surface.

The preparation of the enamels themselves is a special feature of the process, the recipes being considered a manufacturing secret. The aim is to procure an enamel which will firmly adhere to the iron and will not flake off even under extremes of temperature. The enamel is melted in a double reverberatory furnace, one of them being used for colors and the other for white. This furnace, as also the muffle, that will be spoken of later on, are heated by petroleum. The enamel is melted, is tapped from the furnace and is broken and ground. After being ground it is kept in a warming oven to avoid its becoming moist during storage. The enamel, after being applied, is put into a muffle furnace, also heated by oil, and possessing a roof of specially prepared brick, thin in the center, in order to allow of a better utilization of the fuel. The plates are put on a frame and are run in with the aid of a fork handled by a lever, remaining in the oven itself for only a short period. The finer enamels are prepared in two small melting pots of the ordinary design. We have seen a series of signs made by Mr. Martin of excellent design and handsomely executed, the colors being clear and the lettering clean cut and neat. Quite a number of them are now being manufactured for the Brooklyn Elevated Railroad, the New York *Herald*, Boston *Sun*, and a number of large advertisers in public places. They are certainly superior in appearance to the imported English goods which are being so widely used in New York City, Boston and elsewhere.

Mr. Martin is now endeavoring to raise the necessary capital, about $20,000, to put up a new independent plant, which could be completed in about six weeks from the date of breaking ground.

Meeting of Bar-Iron Manufacturers.—At the instance of a very large number of the Eastern bar-iron mills a meeting of manufacturers will be held in the rooms of the Iron and Steel Association, 261 South Fourth street, Philadelphia, on Tuesday, March 27, at 1.30 sharp, to consider the question of conferring with the Western Iron Association as to the practicability of uniting on a joint list of extras, to be known as the national list, and to take the place of the various classifications now in use East and West. The call is signed by Oliver Williams, of Catasauqua, as chairman of the Executive Committee of the Eastern Bar-Iron Conference.

Postmaster-General Dickinson decides that the Atchison, Topeka and Santa Fé Railroad Company are held, under their contracts, to carry the United States mails, regularly and as usual, and without extra compensation, even though the company are prevented by strikes from doing any other business. He says: "The sovereign prerogative of eminent domain has been handed over to these corporations by the States on the ground of public necessity, and other vast public aid has been given them, and it would be well to ascertain whether there is anything in the law making railroads post roads or anything in duty obligations to the public, in return for the grant of governmental powers and subsidies. The effort which is made on the part of this company to compel the Government to take other than Government business, or to force it to officially ask, urge or endeavor to utilize the patriotic offers of the men to engage in other than the Government service, will not succeed."

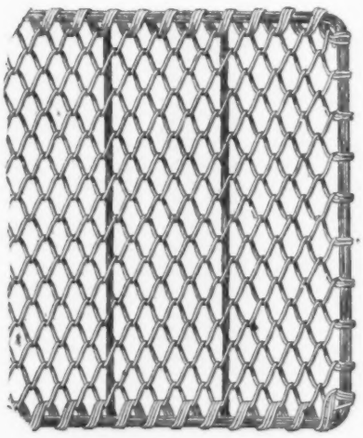
David H. Thomas, son of John Thomas, superintendent of the Thomas Iron Company, at Hokendauqua, Pa., has been appointed assistant superintendent of the works of the above company. Mr. Thomas was formerly superintendent of the furnace department of the Troy Steel and Iron Company, at Troy, N. Y.

On the ground that the two departments of engineering and contracting in blast furnaces and steel works construction should be distinct and separate, Mr. Frank C. Roberts, consulting engineer of the Trenton Iron Company, has opened an engineering office at Fourth and Chestnut streets, Philadelphia. Mr. Roberts was formerly with Messrs Gordon, Strobel & Laureau, and, besides giving attention to the class of work referred to, is making a specialty of wire rope haulage, tramways and transmission of power.

On the 13th inst., Mr. Robert E. Blankenship, president of the Old Dominion Iron and Nail Works Company, of Richmond, Va., was instantly killed by falling beneath a moving car. Mr. Blankenship had been the head and sole executive officer of the company for 23 years, and was well and widely known in the iron trade.

The Pitt Patent Steel-Wire Mat.

The illustration represents this article, which is put on the market by William R. Pitt, 92 Chambers street, New York. These mats are described as woven from a

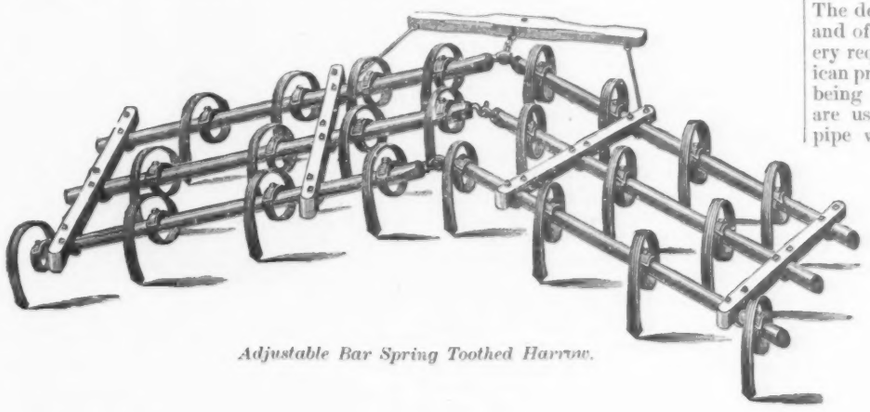


The Pitt Patent Steel-Wire Mat.

fine quality of hard-tempered ungalvanized steel wire, thus securing rigidity and strength, which, taken in connection with the fact that a larger wire is employed than that used by other manufacturers, is referred to as making the mat especially strong and durable. After the mats are woven they are dipped in a galvanizing bath, which is described as soldering every joint and securely fastening every tie of the wire, so that there is no danger of the wires becoming loose to tear the clothing. The following points are also made in regard to these mats: That the coating of galvanizing is especially heavy; that the mat will not rust when frayed at the ends nor cut at the cross bars.

The Adjustable Bar Spring Toothed Harrow.

Childs & Jones, Utica, N. Y., having purchased the patents and right to manufacture and sell the patent Adjustable Bar Spring Toothed Harrow in the States of New York, Pennsylvania, New Jersey and the New England States, are putting this harrow on the market. It is represented in the accompanying illustration, except that the only size at present made has 19 teeth instead of the 23 shown in the cut. The teeth in this harrow are permanently seated upon and coiled around a movable bar, which is held in any position desired by patent friction clamps. With this construction it will be seen that the harrow is readily adjusted to any required depth, without altering the position of the teeth on the bar, thus saving time, and quickly adapting them to any condition of the ground. The manufacturers call attention to the efficiency with which this harrow does its work, as it cuts deeper and pulverizes the soil more perfectly on account of having the teeth coiled around the bar, and the coil acting as a shoe to keep the bar from coming in contact with the ground. Its lightness of draft is also referred to. It is also pointed out that when at work the teeth have a vibratory motion, in addition to the coil motion, by which they more perfectly pulverize the soil and free themselves from rubbish. The two frames of the harrow are connected by a patent wrought and malleable iron swivel coupling, so that the bars can be changed in either direction without affecting the working of the coupling. The teeth are described as made of the best spring steel, and are oil tempered. The manufacture of these harrows in the States outside of those controlled by Childs & Jones is controlled by the Janesville Machine Company, Janesville, Wis.



Adjustable Bar Spring Toothed Harrow.

The magnesium flash light for photographic purposes, as might have been anticipated, has rapidly acquired popularity, but despite words of caution, and in open disregard or ignorance of well-established chemical facts, mixtures of a highly dangerous character have been proposed, and some have been brought into the market; and an explosion in the preparation of such a mixture, of which chlorate of potash and picric acids were ingredients, resulted fatally to the workman. While ignition by means of gun cotton, previously given, is without danger, a method proposed by Mr. Bishop, before the North London Photographic Society, may be more convenient or comfortable in some cases, while it is said to be equally effective. In it the magnesium powder is simply blown into the flame of a spirit lamp supplied with two wicks, one about 3 inches in front of the other, so that the powder that escapes combustion in the first may be ignited by the other. The magnesium powder is contained in a small wide-mouthed bottle, with two tubes passing through the cork; through one, which dips beneath the powder, the magnesium is suddenly projected into the flame by pressure upon a pneumatic ball attached to the other, which only extends below the cork. The amount of powder delivered to the lamp is easily regulated, and the operation can be repeated until the bottle is emptied.

Pruning Shears.

Seymour Smith & Son, Oakville, Conn., for whom John H. Graham & Co., 113 Chambers street, New York, are agents, are putting on the market this season the pruning shears illustrated herewith, which they designate as No. 5 new pattern of 1888. This pruning shear is similar in design to their No. 7, but is fitted to operate with a coiled spring, as shown in the cut. It has an iron shoulder at the back of the blade so as to remove strain from the screws. Their strength and symmetry, together with the fact that they are adapted to fit the hand comfortably, are points made in regard to them.

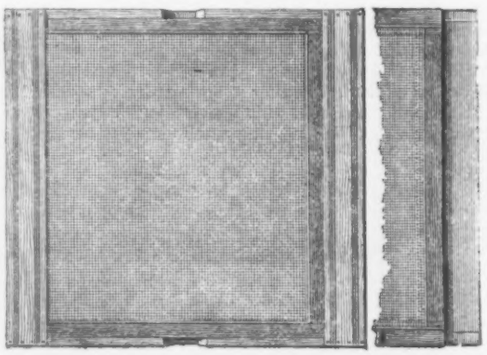
Pruning Shears.

A 500-Mile Pipe Line.—The Russian Government have finally granted the concession for the building of a pipe line from the oil fields of Baku, on the Caspian Sea, to the port of Batoum, on the Black Sea, which has been the great shipping point for Russian oil ever since the railroad between the two places has been completed. The concession is made to a company of French and Russian capitalists, who propose to put down a single line of 8-inch pipe between the two points. For about one-half the distance this line will follow the railroad, but its eastern half will be located on a different and more direct line. The details of the construction of the line and of the pumping stations and machinery required will follow very nearly American practice, the only exception apparently being that some greater precautions than are used here for the protection of the pipe will be required in the wilder and less inhabited parts of the country through which it passes. The total length of the line will be 497 miles; the highest summit to be overcome is about 1100 feet, and no serious difficulty is anticipated in the construction or in the operation of the line. Twenty-four pumping stations are provided for by the plans, and such arrangements will be made that the pipe can be duplicated in case of necessity, although it is not expected that a second pipe will be needed for some years to come.

Mine Inspector Williams's statistics for 1887, for the First Anthracite District, show that the main cause of mine fatalities is falling roof and coal, as the following will show: Deaths by explosion of gas, 6; by falls of roof and coal, 28; by crushed and run over by mine cars, 11; by explosions of powder and blasts, 3; by miscellaneous causes, inside, 7; outside, 11; total, 65.

Adjustable Window Screen.

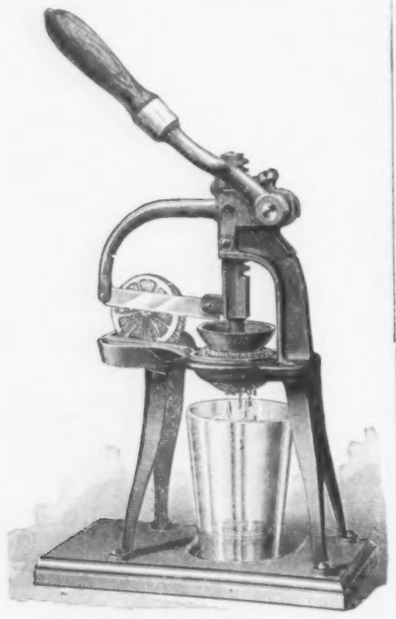
The illustration represents the general appearance of an adjustable window screen which W. J. Clark & Co., of Salem, Ohio, have just ready for the market. In the cut two views are presented; the full view represents the front of the screen with the right wing extended, and the smaller view at the side represents a back view of that part of the screen having the wing extended. The adjustability of the screen is restricted to dimensions governed by the amount of slide given to the wings. How these are arranged is easily seen from the engraving. The construction admits of the screen being made in large quantities, sold through the trade and readily fitted into windows of varying dimensions. In addition to these special features, W. J. Clark & Co. direct attention to the mode of attaching the wire cloth. The plan that they are employing in this respect on this movable or adjustable screen is the same as they have successfully used for some time past in their screens of fixed dimensions. A groove is cut into the frame in such a way as to have no liability of weakening it and into this groove the raw edge of the wire cloth is forced. The space is then filled with a bead neatly bradded in place, making the finish almost flush with the frame and successfully covering up any ragged edges that might otherwise exist. The firm inform us that the screens are made of clear, dry whitewood $\frac{7}{8}$ inch thick, mortised and tenoned together. They employ double selvage wire cloth, stretched by the peculiar construction above described drum-head tight. The mode of attaching the wire mentioned stretches it evenly and fastens every thread, making it strong enough to withstand the misuse or accidents which tear out or leave the cloth flabby, when attached in the ordinary way by tacks with moldings over them.



Clark's Adjustable Window Screen.

The Acme Lemon Squeezer.

F. F. Adams Company, Erie, Pa., are putting on the market a combined lemon squeezer and knife, which is shown in the accompanying cut. The construction and utility of the machine are there illustrated, and little explanation is required. It will be seen that it slices the fruit and at the same time extracts the juice, the glass being set directly under the machine, thereby obviating spilling on the counter or table or soiling the hands. This lemon squeezer is made of malleable iron, the parts being interchangeable, so that duplicates can be had in case of accident by breakage. It is handsomely nickel plated and in size is 12 inches high, 6 inches wide and 10 inches long. The company are now putting into their factory new plating machinery, and they advise us that in the course of two weeks they will be able to turn out a large quantity.



The Acme Lemon Squeezer.

Philadelphia has been lately agitated over the question of the employment of convict labor, a mass meeting in the interest of manufacturers and their employees having been held in that city lately under the auspices of the Interstate Association for the Protection of United Interest Against Convict Labor. This association and its formidable title secured the co-operation of Mr. John Wanamaker, who in his speech made the statement that 240,000 of the 300,000 convicts in the country are working under convict contracts. Congressman John J. O'Neill and Congressman Brumm were among the other speakers.

A quarterly meeting of the Merchant Steel Association of the United States, composed of the open-hearth and crucible steel manufacturers was held in the Monongahela House, at Pittsburgh, on Wednesday, the 14th inst. There were only a few members represented, as it was impossible for the Eastern manufacturers to be present owing to the snow storm, which closed up all travel. No important action was taken, the members present reporting business as being exceptionally dull. The Mills tariff bill was also discussed, but no action was taken regarding it. The association adjourned to meet at the call of the secretary.

Some recent trials of machine guns by foreign governments would seem to indicate that for accuracy and rapidity of fire, as well as for ease and certainty of action, the automatic gun invented by Mr. Hiram S. Maxim, of New York, is far superior to anything else.

Among the announcements of departmental divisions for February, made by J. Johnson, commissioner, are that decorated tin plate in sheets pay duty at the rate of 25 per cent.; that locks, made entirely of brass, pay 30 per cent.; typewriting materials, 30 per cent., and window-shade rollers, finished but without the shades, 35 per cent. The cloth shades are dutiable separately at 5 cents per square yard and 15 per cent.

Anti-Friction Washer Jack Screw.

The Sagamore Mfg. Company, Valatie, N. Y., are putting on the market a line of improved Anti-Friction Washer Jack Screws, which are illustrated in the cuts given below, their special feature being, as indicated in their name, the anti-friction washer with which they are made. Fig. 1 shows the pattern and general appearance of the jack screw, and Fig. 2, giving a sectional view of the washer, illustrates the manner of its construction. As shown in Fig. 2, it will be seen that the washer, instead of revolving directly on the top of the screw spindle, revolves on a number of hardened steel balls, which are placed in a V-shaped groove on the top of the spindle, with a corresponding groove in the washer. These grooves are described as hardened so that with the hardened balls there is no perceptible wear. The object of the introduction of the steel balls is to dispense with the excessive amount of friction in the old style jack, the result being an increase, it is claimed, in the raising capacity of these jacks of from 25 to 40 per cent. The screws are described as made entirely of steel, full threads in barrel, well fitted and finished throughout. The company are prepared to furnish these jacks in a full line of sizes from 1¼-inch screw and 6-inch barrel, to 3-inch screw and 36-inch barrel.

Fig. 1.—Anti-Friction Washer Jack Screw.

Fig. 2.—Showing Anti-Friction Washer.

CURRENT HARDWARE PRICES.

MARCH 21, 1888.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers' prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers at the figures named.

Ammunition.

Caps, Percussion, ₩ 1000—
Hicks & Goldmark's
F. L. Waterproof, 1-10's.....50¢
E. B. Trimmed Edge, 1-10's.....65¢
E. B. Ground Edge, Central Fire, 1-10's.70¢
Double Waterproof, 1-10's.....$1.40
Musket Waterproof, 1-10's.....52¢ @ 53¢
G. D.....28¢
S. B.....30¢
} dis 25@ 25& 7½ %
Union Metallic Cartridge Co.
F. C. Trimmed.....50¢
F. L. Ground.....65¢
Cen. Fire Ground.....70¢
Double Waterproof.....$1.40
Double Waterproof, in 1-10's.....$1.40
} dis 25@ 25& 7½ %
S. B. Genuine Imported.....45¢
Eley's E. B.....54¢ @ 56¢
Eley's D Waterproof, Central Fire.....$1.60

Cartridges—
Rim Fire Cartridges.....dis 50&5&2 %
Rim Fire Military Cartridges.....dis 15&2 %
Cen. Fire Cartridges, Pistol and Rifle...dis 25&5&2 %
Cen. Fire Cartr., Military & Sporting...dis 15&5&2 %
Blank Cartridges, except 22 and 32 cal., an additional 10 % over above discounts.
Blank Cartridges 22 cal.....$1.75, dis 2 %
Blank Cartridges, 32 cal.....$3.50, dis 2 %
Primed Shells and Bullets.....dis 15&5&2 %
B. B. Caps, Round Ball.....$1.75, dis 2 %
B. B. Caps, Conical Ball, Swaged.....$2.00, dis 2 %

Primers—
Berdan Primers all sizes, and B. L. Caps (for Sturtevant Shells).....$1.00, dis 2 %
All other Primers, all sizes.....$1.20 dis 2 %

Shells—
First quality, 4, 8, 10 and 12 gauge...dis 25&10&2 %
First quality, 14, 16 and 20 gauge ($10 list).....dis 30&10&2 %
Star, Club, Rival and Climax Brands, 10 gauge, $9 list } dis 33⅓&10 %
Star, Club, Rival and Climax Brands, 12-gauge, $8 list } 2 %
Club, Rival and Climax Brands, 14, 16 and 20 gauge.....dis 30&10&2 %
Selbold's Combination Shot Shells.....dis 15&2 %
Brass Shot Shells, 1st quality.....dis 60&2 %
Brass Shot Shells, Club, Rival & Climax...dis 65&2 %

Shells Loaded—
List No. 19, 1887.....dis 20 & 10 %

Wads—
U. M. C. & W. R. A.—B. E., 11 up....$2.00
U. M. C. & W. R. A.—B. E., 9&10.....2.30
U. M. C. & W. R. A.—B. E., 7&8.....2.60
U. M. C. & W. R. A.—P. E., 11 up....3.10
U. M. C. & W. R. A—P. E., 9&10.....4.00
U. M. C. & W. R. A.—P. E., 7&8 490
} dis 20&2 %
Eley's B. E., 11 up.....$1.75
Eley's P. E., 11 @ 20.....$2.80

Anvils.—Eagle Anvils....₩ ℔ 10¢, dis 20 @ 20&5 %
Wright's.....9½¢
Armitage's Mouse Hole.....8¾¢
Armitage Mouse Hole, Extra.....11¼@11½¢
Trenton.....9½¢@9½¢
Wilkinson's.....9½¢@10¢
J. & Riley Carr. Patent Solid.....11@11½¢

Anvil Vise and Drill—
Millers Falls Co.....$18.00, dis 20 %
Cheney Anvil and Vise.....dis 25 %
Allen Combined Anvil and Vise.....$3, dis 40&10 %
Moore & Barnes Mfg. Co.....dis 33⅓ %

Augers and Bits.

Douglass Mfg. Co.
New Haven Copper Co.
Wm. A. Ives & Co.
Humphreysville Mfg. Co.
French, Swift & Co. (F. H. Beecher)
....dis 70@70&5 %
Cook's, Douglass Mfg. Co.....dis 55 %
Cook's, New Haven Copper Co...dis 50&10@50&10&5 %
Ives' Circular Lip.....dis 60 %
Patent Solid Head.....dis 30 %
C. E. Jennings & Co., No. 10, extension l'p.....dis 40 %
C. E. Jennings & Co., No. 30.....dis 60 %
C. E. Jennings & Co., Auger Bits, in fancy boxes, ₩ set, 32⅛ quarters, No 5, $5; No. 3C, $2.....dis 20 %
Lewis' Patent Single Twist.....dis 25 %
Russell Jennings' Augers and Bits.....dis 25 %
Imitation Jennings' Bits (new list).....dis 60@3&5 %
Pugh's Black.....dis 20 %
Car Bits.....dis 50&10@60 %
L'Hommedieu Car Bits.....dis 15&10 %
Forstner Pat. Auger Bits.....dis 10 %

Hollow Augers—
Ives
French, Swift & Co.
Douglass'
} dis 35&10 @ 25&10&5 %
Bonney's Adjustable ₩ doz. $45.....dis 40&10 %
Stearns'.....dis 20&10 %
Ives' Expansive, each $4.50.....dis 50&10 %
Universal Expansive, each $4.50.....dis 20 %
Wood's.....dis 35 @ 25&10 %

Expansive Bits—
Clark's small, $18; large, $26.....dis 35 @ 35&5 %
Ives' No. 4, per doz., $60.....dis 35 @ 40 %
Swan's.....dis 40 %
Steer's, No. 1, $26; No. 2, $22.....dis 35 %
Stearns' No. 2, $48.....dis 20 %

Gimlet Bits—
Common.....₩ gross $2.75 @ $3.25
Diamond.....₩ doz. $1.10, dis 25&10 %
"Bee".....dis 25 @ 25&5 %
Double Cut, Shepardson's.....dis 45 @ 45&5 %
Double Cut, Ct. Valley Mfg. Co.....dis 30&10 %
Double Cut, Hartwell's, ₩ gro.....$5.25
Double Cut, Douglass'.....dis 40&10 %
Double Cut, Ives'.....dis 60 @ 60&5 %

Bit Stock Drills—
Morse Twist Drills.....dis 50&10&5 %
Standard.....dis 50&10&5 %
Cleveland.....dis 50&10&5 %
Syracuse, for metal.....dis 50&10&5 %
Syracuse, for wood (wood list).....dis 30 @ 30&5 %
Williams' or Holt's, for metal.....dis 50&10&10 %
Williams' or Holt's, for wood.....dis 40&10 %

Ship Augers and Bits—
L'Hommedieu's.....dis 12&10 %
Watrous's.....dis 15&10 %
Snell's.....dis 12&10 %
Snell's Ship Auger Pattern Car Bits.....dis 15&10 %

Awl Hafts.
Sewing, Brass Ferrule.....$3.50 ₩ gross—dis 45&10 %
Patent Sewing, Short.....$1.00 ₩ doz.—dis 40&10 %
Patent Sewing, Long.....$1.20 ₩ doz.—net
Patent Peg, Plain Top.....$10.00 ₩ gross—dis 45&10 %
Patent Peg, Leather Top....$12.00 ₩ gross—dis 45&10 %

Awls, Brad Sets, &c.
Awls, Sewing, Common.....₩ gross $1.70—dis 35 %
Awls, Shouldered Peg....₩ gross $2.45—dis 40@40&10 %
Awls, Patent Peg.....₩ gross 63¢—dis 40@40&10 %
Awls, Shouldered Brad.....$2.70 ₩ gross—dis 35 %
Awls, Handled Brad.....$7.50 ₩ gross—dis 45 %
Awls, Handled Scratch.....$7.50 ₩ gross—dis 35&10 %
Awls, Socket Scratch.....$1.50 ₩ doz—dis 25 @ 30 %

Awl and Tool Sets.
Aiken's Sets, Awls & Tools, No. 20, ₩ doz. $10—dis 50&10 %
Gray's Ad Tool Hdls., Nos. 1, $12; 2, $18.; 3, $12; 4, $9. dis 25&25&10 %
Miller's Falls Adj. Tool Hdls., Nos. 1, $12; 2, $18, dis 25 %
Henry's Combination Haft.....₩ doz. $6
Brad Sets, No. 42, $10.50, No. 45, $12.50...dis 70&10&5 %
Brad Sets, Stanley's Excelsior, No. 1, $7.50. }
Brad Sets, Stanley's Excelsior, No. 2, $4.00. } dis 30&10 %
Brad Sets, Stanley's Excelsior, No. 3, $5.50. }

Axes.
Makers' and Special Brands—
First quality.....₩ doz, $6.25 @ $6.50
Others.....₩ doz, $5.75

Axle Grease.
Frazer's, in bulk.....Keg ₩ ℔, 4¢; Pail, ₩ ℔, 5¢ net
Frazers, in boxes.....₩ gross $9.50
Dixon's Everlasting, in bxs., ₩ doz., 1 ℔: $1.20; 2 ℔, $2
Dixon's Everlasting.....10-℔ pails, each, 85¢
Lower grades, special brands.....₩ gro $5.50 @ $7

Axles.—No. 1, 4¢ @ 4¼¢; No. 2, 5¼ @ 5½¢.
Nos. 7 to 18.....dis 40&10 @ 50 %
Nos. 19 to 22.....dis 60&10 @ 60&10&10 %
National Wrought Steel Tubular Self-Oiling:
Standard Farm (1 to 5) and Special Farm (A1 to A5)
Less than 10 sets.....dis 33⅓ %
Over 10 sets.....dis 33⅓&5 %
K Strong Exp. (6 to 9), & XX Strong Truck (10 to 16):
Less than 10 sets.....dis 10 %
Over 10 sets.....dis 10&5 %

Bag Holders.
Sprengle's Pat., ₩ doz $18.....dis 60 %

Balances.—Spring Balances.....dis 50 %
Common 24 ℔.....₩ doz., $1.50—dis 50 %
Chatillon's Spring Balances.....dis 50 %
Chatillon's Circular Spring Balances.....dis 60 %

Bells.
Hand—
Light Brass.....dis 70&10 %
Extra Heavy.....dis 60&10 %
White Metal.....dis 60&10&10 %
Silver Chime.....dis 25&10&5 %
Globe (Cone's Patent).....dis 25&10 @ 35 %
Door—
Gong, Abbe's.....dis 25&10 @ 35 %
Gong, Yankee.....dis 40&10 %
Gong, Barton's.....dis 40@10 @ 50 %
Crank, Taylor's.....dis 25&10 %
Crank, Brooks'.....dis 50&10&2 %
Crank, Cone's.....dis 10 %
Crank Connell's.....dis 20&10 %
Lever, Sargent's.....dis 60&10 %
Lever, Taylor's Bronzed or Plated.....net
Lever, Taylor's Japanned.....dis 25&10 %
Lever, R. E. ₩ Co.'s.....dis 50&10&2 %
Pull, Brook's.....dis 50&10&2 %
Pull Western.....dis 25&10 %
Cow—
Common Wrought.....dis 60&10 %
Western.....dis 20&10 %
Western, Sargent's list.....dis 70&10 %
Kentucky "Star".....dis 20&10 %
Kentucky, Sargent's list.....dis 70&10 %
Dodge, Genuine Kentucky, new list.dis 70@70&10 %
Texas Star.....dis 50&10 @ 50&10&5 %
Tall.....dis 40@40&5 %
Farm Bells.....₩ ℔, 23¢ @ 3¢
Steel Alloy Church and School Bells.....dis 40 %

Bellows.—Blacksmiths'.....dis 60&10&5 @ 60 %
Moulders'.....dis 40&10 @ 50 %
Hand Bellows.....dis 40&10 @ 50 %

Belting, Rubber.
Common Standard.....dis 75 %
Standard.....dis 70&5 %
Extra.....dis 60&10 %
N. Y. B. & P. Co., Standard.....dis 60&5&5 %
N.Y.B.&P Co., Extra Standard.....dis 50&10&5 %

Bench Stops.
Morrill's.....₩ doz $9—dis 50 %
Hotchkiss's.....₩ doz $5.00—dis 10 @ 10&10 %
Weston's, per doz No. 1, $10; No. 2, $9...dis 25&10&5 %
McGill's.....₩ doz $3—dis 10 %

Bits.—Auger, Gimlet Bit Stock, Drills, &c., see Augers and Bits.

Bit Holders.
Extension, Barber's.....₩ doz $15.00—dis 40 @ 40&10 %
Extension, Ives'.....₩ doz $30.00—dis 60&5 @ 60&10 %
Diagonal.....₩ doz $24.00—dis 40 %
Angular.....₩ doz $24.00—dis 40&5 %

Blind Adjusters.
Domestic.....₩ per doz $3.00—dis 33⅓ %
Excelsior.....₩ doz $10.00—dis 50&10&2 %
Washburn's Self-Locking.....dis 20 @ 20&10 %

Blind Fasteners.
Mackrell's.....₩ doz pairs, $1.00—dis 20@20&10 %
Van Sand's Screw Pattern.....$15 ₩ gro.—dis 60&10 %
Van Sand's Old Pattern.....$15 ₩ gro.—dis 55&10 %
Washburn's Old Pattern.....$9 ₩ gro. net
Merriman s.....new list, net
Austin & Eddy No. 2008.....$9 ₩ gro. net
Security Gravity.....$9 ₩ gro. net

Blind Staples.
Barbed, ½ in. and larger.....₩ ℔ 8 @ 8½¢ net
Barbed, ¾ in.....₩ ℔ 9 @ 9½¢ net

Blocks.
Ordinary Tackle, list April 17, '85.....dis 40 %
Cleveland Block Co., Mal. Iron.....dis 50 %

Bolts.
Door and Shutter—
Cast Iron Barrel, Square, &c.....dis 70 @ 70&10 %
Cast Iron Shutter Bolts.....dis 70 @ 70&10 %
Cast Iron Chain (Sargent's list).....dis 65&10 %
Ives' Patent Door Bolts.....dis 55 %
Wrought Barrel.....dis 70 @ 70&10 %
Wrought Square.....dis 70 @ 70&10 %
Wr't Shutter, all Iron, Stanley's list.....dis 60&10 %
Wr't Shutter, Brass Knob, Stanley's.....dis 40&10 %
Wrought Shutter, Sargent's list.....dis 60&10 %
Wrought Sunk Flush, Sargent's list.....dis 55&10 %
Wrought Sunk Flush, Stanley's list....dis 40&10&5 %
Wrought B. K. Fluan. Com'n Stanley's list. dis 55&10 %

Carriage—
Com. list June 10, '84.....dis 70&10&5 %
Genuine Eagle, list Oct., '84.....dis 75 @ 75&5 %
Philla. pattern, list Oct. 7, 84...dis 75&10@75&10&5 %
R. B. & W., old list.....dis 70 %

Tire—
Common, list Feb. 28, 1883.....dis 65&10 %
P. C. B. & N. Co., Empire, list Feb. 28, 1883.dis 65&10 %
P. C. B. & N. Co., Philadel., list Oct. 84. dis 82½ %
P.C.B.&N.Co., Keystone, Phil. list. Oct. '84.....dis 80 %
P.C.B.&N.Co., Norway, Phil. list, Oct.'84.dis 75&10 %
Am. S. Co., Norway, Phil., list Oct. 16, '84...dis 75&10 %
Am. S. Co., Eagle, Phil., list Oct. 16, '84.....dis 80 %
Am. S. Co., Philadel. list, Oct. 16, 84.....dis 82½ %
Am. S. Co., Bay State, list Feb. 28, '83.....dis 65&10 %
R. B. & W., Philadel. list Oct. 16, 1884.....dis 82½ %
R. & E. Mfg. Co.....dis 65 %

Stove and Plow—
Stove.....dis 62½ %
Plow.....dis 60&5 %
Am. S. Co. Stove, Annealed.....dis 62½ %
R. B. & W., Plow.....dis 55 %
R. B. & W., Stove.....dis 62½ %
R. & E. Mfg. Co., Stove.....dis 62½ %
Machine.....dis 75@75&5 %
Bolt Ends.....dis 75@75&5 %

Borax......₩ ℔ 9½@10¼¢

Boring Machines.

Without Augers.	Upright.	Angular.
Douglas	$5.50	$6.75.....dis 50 %
Snell's, Rice's Patent	5.50	6.75.dis 40&10&10 %
Jennings	5.50	6.75.dis45@45&10%
Other Machines	2.35	2.75.....net
Phillips' Pat., with Augers	7.00	7.50.....net

Bow Pins
Humason, Beckley & Co.'s.....dis 60&10 %
Sargent & Co.'s.....$17 and $18, dis 60&10 %
Peck, Stow & W. Co.....dis 50&10 @ 50&10&5 %

Braces.
Backus, Nos. 110 to 114 and 31 to 33..dis 60&5@60&10%
Backus, Nos. 6, 8, 12, 14.....dis 60&10&5 %
Backus, Nos. 16, 18, 20, 29, 7 .9, 11.....dis 70&10&5 %
Barber's, Nos. 10 to 16.....dis 50 %
Barber's, Nos. 30 to 33.....dis 50 %
Barber's, Nos. 40 to 63.....dis 50&10 %
Barker's, Nos. 8, 10 and 12.....dis 75&10@80 %
Barker's, Plated, Nos. 8, 10 and 12.....dis 65&10@70 %
Osgood's Ratchet.....dis 40&10@50 %
Spofford's.....dis 50&10 %
Ives' New Haven Novelty.....dis 70 @ 70&5 %
Ives' New Haven Ratchet.....dis 6..&5 @ 60&10 %
Ives' Barber Ratchet.....dis 60&5 @ 60&10 %
Ives' Barbers.....dis 60&5 @ 60&10 %
Ives' Spofford.....dis 60&5 @ 60&10 %
Common Ball, American.....$1.10 @ $1.15
Bartholomew's, Nos. 25, 27, 30.....dis 50&10@60&5 %
Bartholomew's, Nos. 117 118 119.....dis 70 @ 70&5 %
Amidon's Barker's Imp'd Plain.....dis 75&10 @ 80 %
Amidon's Barker's Imp. Nickeled.....dis 65&10 @ 70 %
Amidon's Ratchet.....dis 75&10 @ 80 %
Amidon's Eclipse Ratchet.....dis 60 %
Amidon's Globe Jawed.....dis 40&40&10 %
Amidon's Corner Brace.....dis 40 @ 40&10 %
Amidon's Universal.....8 in., $2.10; 10 in., $2.25
Amidon's Buffalo Ball.....$1.10 @ $1.15
P. S. & W.....dis 50&10 %

Brackets.
Shelf, plain, Sargent's list.....dis 55&10 @ 55&10&10 %
Shelf, fancy, Sargent's list.....dis 60&10 @ 60&10&10 %
Reaping, plain.....dis 60&10 @ 60&10&5 %
Reading, Rosette.....dis 60&10 @ 60&10&10 %

Bright Wire Goods.—.....dis 75&10&10@— %

Broilers.

Inch.	9	10	9 x 11
Per doz.	$4.50	5.50	6.50

Henis' Self-Basting..

Buckets.—See Well Buckets and Pails.

Bull Rings.—Union Co. Nut.....dis 55 %
Sargent's.....dis 66⅔&10 @ 70&5 %
Hotchkiss' low list.....dis 30 %
Humason, Beckley & Co.'s.....dis 70 %
Peck, Stow & W. Co.'s.....dis 50&10 @ 50&10&10 %
Ellrich Hdw. Co., White Metal, low list.dis 50@50&10 %

Butcher's Cleavers.
Bradley's.....dis 25 @ 30 %
L. & I. J. White.....dis 20&5 f
Beatty's.....dis 40 @ 40&5%

1	2	3	4	5	6	7	8
$16.50	19.00	21.50	24.00	27.00	30.00	33.50	36.50

New Haven Edge Tool Co.'s.....dis 40 %
P. S. & W.....dis 33⅓&5 @ 33⅓&10 %

Butts.
Brass—
Wrought Brass.....dis 70@70&10 %
Cast Brass, Tiebout's.....dis 33⅓ %
Cast Brass, Corbin's Fast.....dis 33⅓&10 %
Cast Brass, Loose Joint.....dis 33⅓&10 %
Cast Iron—
Fast Joint, Narrow.....dis 50&10 %
Fast Joint, Broad.....dis 55&10 %
Loose Joint.
Loose Joint, Japanned.
Loose Joint, Jap. with Acorns.
Parliament Butts.
Mayer's Hinges.
Loose Pin, Acorns.
Loose Pin, Acorns, Japanned.
Loose Pin, Acorns, Jap, Fltd. Tips.
} dis 66⅔&10 %
Wrought Steel—
Fast Joint Narrow.....dis 65&10@70 %
Fast Joint, Lt. Narrow.....dis 65&10@70 %
Fast Joint, Broad.....dis 65&10@70 %
Loose Joint, Broad.....dis 65&10@70&5 %
Table Butts, Back Flaps, &c.....dis 65&10@70 %
Inside Blind, Regular.....dis 65&10@70 %
Inside Blind, Light.....dis 65&10@70 %
Loose Pin, Wrt.....dis 65&10@70&5 %
Loose Pin, Light.....dis 65&10@70&5 %
Bronzed Wrought Butts.....dis 40@40@10 %

Calipers.—See Compasses.

Calks, Toe
Gautier.....₩ ℔ 5¼@6¢
Dewicks.....₩ ℔ 5½@6¢

Can Openers.
Messenger's Comet.....₩ doz $3.00, dis 25 %
American.....₩ gross $3.00
Duplex.....₩ doz 25¢, dis 15 @ 20 %
Lyman's.....₩ doz $3.75, dis 20 %
No. 4, French.....₩ doz $2.25, dis 55 @ 60 %
No. 5, Iron handle.....₩ gross $6.00, dis 45 @ 50 %
Eureka.....₩ doz $2.50, dis 10 %
Sardine Scissors.....₩ doz $7.00, dis 55 %
Star.....₩ doz $5.00, dis 25&5 %
Sprague, No. 1 ½; 2 ; 3, $2.50.....dis 50&10&10

World's Best. ₩ gross, No. 1, $12.00; No. 2, $24.00, No. 3, $36.00.....dis 50&10 %
Universal.....₩ doz $3.00, dis 35&5 %
Domestic.....₩ doz $2.50, dis 45 %
Champion.....₩ doz $2.00, dis 50 %

Cards.
Horse and Curry.....dis 10 @ 10&10 %
Cotton.....New list, Aug., 1883, dis 10 %
Wool..... " " " dis 10 %

Carpet Stretchers.
Cast Steel, Polished.....₩ doz $3.25
Cast Iron, Steel Points.....₩ doz 80¢
Socket.....₩ doz $1.75
Bullard's.....dis 25 @ 25&10 %

Carpet Sweepers.
Bissell No. 5.....₩ doz $17.00
Bissell No. 7 New Drop Pan.....₩ doz $19.00
Bissell Grand.....₩ doz $36 00
Grand Rapids.....₩ doz $24.00
Crown Jewel.....No. 1, $18; No. 2, $19; No. 3, $20
Magic.....₩ doz $15.00
Jewel.....₩ doz $17.00
Mystic.....₩ doz $16.00
Cottage.....₩ doz $15.00
Garland.....₩ doz $18.00
Parlor Queen.....₩ doz $24.00
Housewife's Delight.....₩ doz $15.00
Queen.....₩ doz $16.00
Queen, with band.....₩ doz $18.00
King.....₩ doz $20.00
Weed Improved.....₩ doz $18.00
Hub.....₩ doz $16.00
Cog Wheel.....₩ doz $16.00

Cartridges.—See Ammunition.

Casters.
Bed, Plate, Shallow Socket } New list: Brass...dis 55 %, Others...dis 60 %
Deep Socket.....40&10 %
Yale Casters, list May, 1884.....dis 30&10&40 %
Yale, Gem.....dis 60&60&5 %
Martin's Patent (Phœnix).....dis 45&10 @ 50 %
Payson's Anti-friction.....dis 60 @ 60&10 %
"Giant" Truck Casters.....dis 10 @ 10&5 %
Stationary Truck Casters.....dis 45&10

Cattle Lenders.
Blumason, Beckley & Co.'s.....dis 70 %
Sargent's.....dis 60&10 %
Hotchkiss.....dis 30 %
Peck Stow & W. Co.....dis 50&10 %

Chain.
Trace, 6/4-10-2, exact sizes. ₩ pair, $1 03 } dis 50&10&5 @ 50&10&7½ %
Trace, 6/4-10-3, exact sizes. ₩ pair, .92 }
Trace 7-10-2, exact sizes... ₩ pair, 1.11 }
NOTE.—Traces, "Regular" sizes 5¢ net ₩ pair less than exact.
Log, Fifth, Stretcher, and other fancy Chains, list Nov. 1, 1884.....dis 50&10 @ 50&10&5 %
American Coil 3-16 ¼ 5-16 ⅜ 7-16 ½ ⅝ ¾
In cask lots. 8.50 6.25 5.25 4.60 4.40 4.20 3.95 3.75
Less than cask lots, add ¼@½¢ ₩ ℔.
German Coil, list of June 20, 1887.....dis 60@60&5 %
Ger. Halter Chain, list of June 20, 1887...dis 60@60&5 %
Covert Halter, Hitching and Breast.....dis 50&2 %
Covert Traces.....dis 35@2 %
Oneida Halter Chain (old list).....dis 45 %
Galvanized Pump Chain.....₩ ℔ 6¢ @ 6¼¢
Jack Chain, Iron.....dis 70&10 @ 75 %
Jack Chain, Brass.....dis 70 @ 70&10 %

Chalk.
White.....₩ gro 55¢
Red.....₩ gro 75¢
Blue.....₩ gro 90¢
White Crayons.....₩ gro 12¢ @ 12½¢

Chalk Lines.—See Lines.

Chisels.
Socket Framing and Firmer—
Witherby and Douglas, P., S. & W., New Haven and Middlesex, Mix } dis 75&5 @ 75&10 %
Buck Bros.....dis 30 %
Merrill.....dis 60&10@60&10&5 %
L. & I. J. White.....dis 30 @ 30&5 %
Tanged Firmers.....dis 40&10 @ 50 %
Tanged Firmers, Butcher's.....$4.75 @ $5.00
Tanged Firmers, Spear & Jackson's.....$5.00 to 2
Tanged Firmers, Buck Bros.....dis 30 %
Cold Chisels, ₩ ℔.....16¢ @ 19¢

Chucks.
Beach Patent.....each, $8.00, dis 20 %
Morse's Adjustable.....each, $7.00, dis 20 @ 20&5 %
Danbury.....each, $6.00, dis 30 @ 30&5 %
Syracuse, Bals Pat.....dis 25 %

Clamps.
Providence Tool Co.'s Wrought Iron.....dis 25 %
Adjustable, Gray's.....dis 20 %
Adjustable, Lambert's.....dis 20 %
Adjustable, Snow's.....dis 40&5 %
Adjustable, Hammer's.....dis 15 %
Adjustable, Stearns'.....dis 20&10 %
Stearns' Adjustable Cabinet and Corner...dis 20&10 %
Cabinet, Sargent's.....dis 66⅔&10 %
Carriage Makers', Sargent's.....dis 66⅔&10 %
Eberhard Mfg. Co.....dis 40&5 @ 40&10 %
Warner's.....dis 40&10 @ 40&10&5 %
Saw Clamps.....See Vises

Clips.
Norway, Axle, ¼ & 5-16.....dis 55&5&5
Second grade Norway Axle, ¼ & 5-16.....dis 65&5
Superior Axle Clips.....dis 66⅔&5 @ 66⅔&5&5 %
Norway Spring Bar Clips, 5-16.....dis 60&5&5
Wrought-Iron Felloe Clips.....₩ ℔ 4¢
Steel Felloe Clips.....₩ ℔ 5¢

Cockeyes......dis 50 %

Cocks, Brass.
Hardware list.....dis 40&10&2 %

Coffee Mills.
Box and Side, List revised Jan. 7, 1888.....dis 50&2 %
Selsor's Patent.....$9.00, $10.50, dis 25 %
American, Enterprise Mfg. Co.....dis 20&10&30 %
The "Swift," Lane Bro's.....dis 20&10 %
Webb's Patent.....dis 45 %

Compasses, Dividers, &c.
Compasses, Calipers, Dividers.....dis 70@70&10 %
Bemis & Call Co.'s Dividers.....dis 60&5 %
Bemis & Call Co.'s Compasses & Calipers...dis 50&5 %
Bemis & Call Co.'s Wing & Inside or Outside.dis 50&5 %
Bemis & Call Co.'s Double.....dis 60 %
Bemis & Call Co.'s (Call's Patent Inside).....dis 30 %
Excelsior.....dis 50 %
J. Stevens & Co.'s Calipers and Dividers....dis 25&10 %

Coopers' Tools.
Bradley's.....dis 20 %
Barton's.....dis 20&20&5 %
L. & I. J. White.....dis 20&5 %
Albertson Mfg. Co.....dis 25 %
Beatty's.....dis 40 @ 40&5 %
Sandusky Tool Co.....dis 30 @ 30&5 %

Corkscrews.
Humason & Beckley Mfg. Co.....dis 40 @ 40&10 %
Clough's Patent.....dis 33⅓ @ 33⅓&5 %
Howe Bros. & Hulbert.....dis 35 %

Corn Knives and Cutters.
Bradley's.....dis 10 %
Wadsworth's.....dis 25 %

Cradles.—Grain.....dis 50&10 @ 60 %

Crow Bars.
Cast Steel.....₩ ℔ 4¢
Iron, Steel Points.....₩ ℔ 3½¢

Curry Combs.
Fitch's.....dis 50&10 @ 50&10&10 %
Rubber.....₩ doz $10.00, dis 20 %
Perfect.....dis 50 %

Curtain Pins.
Silvered Glass.....net
White Enamel.....net

Cutlery.
Beaver Falls and Booth's.....dis 33⅓ %
Wostenholme.....$7.75 to £

Dampers, &c.
Dampers and Clips, Buffalo.....dis 40 %
Crown Damper.....dis 40 %
Excelsior.....dis 40&10 %

Dividers—See Compasses.

Dog Collars.
Embossed Gilt, Pope & Stevens' list.....dis 30&10 %
Leather, Pope & Stevens' list.....dis 40 %
Brass, Pope & Stevens' list.....dis 40 %

Door Springs.
Torrey's Rod, regular size.....₩ doz $1.30
Gray's.....₩ gro, $20.00, dis 20 %
Bee Rod.....₩ gro, $20.00, dis 20 %
Warner's No. 1, ₩ doz, $2.50; No. 2, $3.30, dis 40&10@50 %
Gem (Coil), list April 19, 1886.....dis 10 %
Star (Coil), list April 19, 1886.....dis 20 %
Victor (Coil).....dis 60 @ 60&10 %
Champion (Coil).....dis 60&10 @ 60&10&10 %
Philadelphia.....5 in., $5.00; 8 in., $7.75, dis 30 %
Cowell's.....No. 1, ₩ doz $18.00; No. 2, $15.00, dis 50 %
Ruber, complete.....₩ doz $4.50, dis 55&10 %
Hercules.....dis 50 %
Shaw Door Check and Spring.....dis 25 @ 30 @ 35 %
Elliott's Door Check and Spring.....dis 25 %

Drawing Knives.
Witherby and Douglas, P., S. & W., New Haven and Middlesex } dis 75&10 @ 75, 10&5 %
Merrill.....dis 60&10&10 %
Watrous.....dis 15&10 @ 25 %
L. & I. J. White.....dis 20&5 %
Bradley's.....dis 35 %
Adjustable Handle.....dis 20 @ 25 %
Wilkinson's Folding.....dis 25 @ 25&5 %

Drill and Drill Stocks.
Blacksmiths'.....each, $1.60 @ $1.65
Blacksmiths' Self-Feeding.....each, $7.50, dis 20 %
Breast, P. S. & W.....dis 40&10 %
Breast, Wilson's.....dis 30&5 %
Breast, Millers Falls.....each, $3.00 dis 25 %
Breast, Bartholomew's... each, $2.50, dis 25&10 @ 40 %
Ratchet, Merrill's.....dis 20 @ 20 & 5 %
Ratchet, Ingersoll's.....dis 25 %
Ratchet, Parker's.....dis 20 @ 20&5 %
Ratchet, Whitney's.....dis 20&10 %
Ratchet, Weston's.....dis 20@25 %
Ratchet, Moore's Triple Action.....dis 25 @ 30 %
Whitney's Hand Drill, Plain, $11.00; Adjustable, $12.00.....dis 20&10 %
Wilson's Drill Stocks.....dis 1[illegible]
Automatic Boring Tools.....each, $1.75 @ $1.85
Twist Drills—
Morse.....dis 50&10&5 %
Standard.....dis 50&10&5 %
Syracuse.....dis 50&10&5 %
Cleveland.....dis 50&10&5 %
Williams.....dis 50&10&10 %

Drill Bits.—See Augers and Bits.

Drill Chucks.—See Chucks.

Dripping Pans.
Small sizes.....₩ ℔ 7¢
Large sizes.....₩ ℔ 6½¢

Egg Beaters.
Dover.....₩ doz., $2.00
National.....₩ doz $4.50, dis 33⅓ %
Family (T. & S. Mfg. Co.).....₩ gro, $17.00@$18.00
Standard (Standard Co.).....₩ gro, $9.00
Kingston (Standard Co.).....₩ gro, $6.50
Acme (Standard Co.).....₩ gro, 7.00
Duplex (Standard Co.).....₩ gro, $18.00
Rival (Standard Co.).....₩ gro, $12.00
Triumph (T. & S. Mfg. Co.).....₩ gro, 10.50@$11.50
Advance No. 1.....₩ gro $10.50
Advance, No. 2.....₩ gro $10.00
Bryant's.....₩ gro $15.00
Ayres' Spiral.....₩ gro $8
Paine, Diehl & Co's.....₩ gro $24.00

Electric Bell Sets.—Wollensak's.....dis 15 %
Bigelow & Dowse.....dis 20 %

Emery.	No. 4 to 46 gr.	No. 54 to 150 gr.	Flour, CF FF.
Kegs, ₩ ℔	4 ¢	5 ¢	2½¢
½ kegs, ₩ ℔	4½¢	5½¢	2¾¢
¼ kegs, ₩ ℔	4¾¢	5¾¢	3 ¢
10-℔ cans, 10 in case	6 ¢	6⅞¢	5 ¢
10-℔ cans, less than 10	10 ¢	10 ¢	7½¢

Enameled and Tinned Ware.—See Hollow-Ware.

Escutcheon Pins.
Iron, list Nov. 11, 1885.....dis 50&10 @ 50&10&5
Brass.....dis 60 @ 60&5 %

Escutcheons.
Door Locks.....Same discounts as Door Locks
Brass Thread.....dis 60 @ 60&10 %
Wood.....dis 25 %

Faucets.
Fenn's.....dis 40 %
Bohren's Patent Rubber Ball.....dis 25 %
Fenn's Cork Stops.....dis 33⅓ %
Star.....dis 60 @ 60&5 %
Frary's Patent Petroleum.....dis 40&10&2 %
West's Patent Key.....dis 50&10 %
Anchor Lock.....dis 45 %
Metallic Key, Leather Lined.....dis 55&10 @ 60&10 %
Cork Lined.....dis 70 @ 70&10 %
Burnside's Red Cedar.....dis 50 %
Burnside's Red Cedar, bbl. lots.....dis 50&10 %
J. Sommer's Best Block Tin Key.....dis 40 %
J. Sommer's Cork Lined, 1st quality.....dis 50 %
J. Sommer's Diamond Lock.....dis 40 %
J. Sommer's Perfection, Fla. Red Cedar.....dis 50 %
J. Sommer's Goodenough Cedar.....dis 60 %
Self-Measuring, Enterprise...₩ doz $36.00—dis 20&10 %
Self-Measuring, Lane's.....₩ doz $36.00—dis 25&10 %
Self-Measuring, Victor.....₩ doz $36.00—dis 25&10 %

Felloe Plates......₩ ℔ 6 @ 6½¢

Fifth Wheels.—Derby and Cincinnati.dis 45&5 %

Files.
Domestic—
Best brands.....dis 60&10 @ 60&10&5 %
Good brands.....dis 60&10&5 @ 60&10&10 %
Fair brands.....dis 70 @ 70&10 %
Heller's Horse Rasps.....dis 60&7½ @ 50&10 %
Imported—
J. & Riley Carr.....List, April 1, 1883, dis 15 %
J. & Riley Carr Horse Rasps.....dis 10 %
Moss & Gamble.....List April 1, 1883, dis 15 %
Butcher.....Butcher's list, dis 20 %
Stubs.....Stubs list, dis 25 @ 30 %
Turton's.....Turton sellist dis. 20 @ 25 %
Greaves' Horse Rasps.....American list. dis. 60 %

Fluting Machines.
Knox, 4½-inch Rolls.....$3.25 each
Knox, 6-inch Rolls.....$3.60 each } dis 35 %
Eagle, 3½-inch Roll.....$2.15, dis 35 %
Eagle, 5½-inch Roll.....2.85, dis 35 %
Crown, 4½ in., $3.50; 6-in, $4.00; 8-in., $6.50 each, dis 35 %
Crown Jewel.....6-in., $2.50 each, dis 35 %
American, 5-in., $3; 6-in., $3.40; 7-in., $4.50 each, dis 35 %
Domestic Fluter.....$1.50 each, net
Geneva Hand Fluter, White Metal..₩ doz $12, dis 25 %
Crown Hand Fluter, Nos. 1, $15; 2, $12.50; 3, $10. dis 30 %
Shepard Hand Fluter, No. 85.....₩ doz $15.30, dis 40 %
Shepard Hand Fluter, No. 110.....₩ doz $11, dis 40 %
Shepard Hand Fluter, No. 95.....₩ doz $8, dis 40 %
Clark's Hand Fluter.....₩ doz $15.00, dis 35 %
Combined Fluter and Sad Iron...₩ doz $15.00, dis 30 %
Buffalo.....₩ doz $10.00 dis 10 %

Fluting Scissors......dis 45 %

Forks.—Hay, Manure, &c., Asso. list.....dis 65&5 %
Hay, Manure, &c., Phila. list.....dis 60 @ 60&5 %
Plated, see Spoons.

Freezers, Ice Cream.
Shepard's Lightning.....dis 65 %

Fruit and Jelly Presses.
Enterprise Mfg. Co.....dis 20&10 @ 30 %
Henis.....₩ doz $4.50
Shepard's Queen City.....dis 40 %

Fry Pans.
Association List.....dis 75 @ 75&10 %

No.	0	1	2	3	4	5	6	7	8
₩ doz.	$3.75	4.70	5.30	5.95	6.55	7.50	8.75	10.00	11.25

Fuse......₩ 1000 ft.
Common Hemp Fuse, for dry ground.....$2.70
Common Cotton Fuse, for dry ground.....2.85
Single Taped Fuse, for wet ground.....4.75
Double Taped Fuse, for very wet ground.....6.00
Triple Taped Fuse, for very wet ground.....7.25
Small Gutta Percha Fuse, for water.....7.50
Large Gutta Percha Fuse, for water.....12.00

Gauges.
Marking Mortise, &c.....dis 60&10 %
Wire, low list.....dis 10&10 %
Wire, Wheeler, Madden & Co.....dis 10 %
Wire, Morse's.....dis 50 @ 50&5 %
Wire, Brown & Sharpe's.....dis 10 @ 20 %

Gimlets.—Nail and Spike.....dis 50&10&5 %
"Eureka" Gimlets.....dis 40&10 %
"Diamond" Gimlets.....₩ gross $5.00
Double Cut, Shepardson's.....dis 45 @ 45&5 %
Double Cut, Ives'.....dis 60 @ 60&5 %
Double Cut, Douglass'.....dis 40&10 %
"Bee".....₩ gross $12, dis 25 @ 25&5 %

Glue.
Le Page's Liquid.....dis 25 @ 25&5 %
Upton's Liquid.....dis 35 %

Glue Pots.
Tinned and Enameled.....dis 40&5 @ 40&10 %
Family, Howe's "Eureka".....dis 40 %
Family, L. F. & C.'s "Handy".....dis 40&10 %

Grindstone Fixtures.
Sargent's Patent.....dis 70&10 %
Reading Hardware Co.....dis 30&10 %

Hack Saws.—See Saws.

Halters.—Covert's, Rope, ¼-in. Jute.....dis 50&2 %
Covert's, Rope, ¼-in., Hemp.....dis 40&2 %
Covert's Hemp Horse and Cattle Tie.....dis 50&2 %
Covert's Jute Horse and Cattle Ties.....dis 60&10&2 %

Hammers.
Handled Hammers.
Maydole's.....List Dec. 1, 1885, dis 25 @ 25&1 0%
Buffalo Hammer Co., C. Hammond & Son, Humason & Beckley, Atha Tool Co., Fayette R. Plumb } List Jan. 15, '87 Dis. 50 @ 50& 10 %
Averee.....dis 5 %
Magnetic Tack, Nos. 1, 2, 3, $1.25, 1.50 & 1.75, dis 30&10 %
Nelson Tool Works.....dis 40&10 %
Warner & Nobles.....dis 20 @ 25 %
Peck, Stow & Wilcox.....dis 40 %
Sargent's.....dis 33⅓&10 %
Heavy Hammers and Sledges—
3 ℔ and under.....₩ ℔ 40¢
3 to 5 ℔.....₩ ℔ 36¢ } dis 70 @ 70 &5 %
Over 5 ℔.....₩ ℔ 30¢
Wilkinson's Smiths'.....10½¢ @ 11¢ ₩ ℔

Hand Cuffs and Leg Irons.
Providence Tool Co., Hand Cuffs, $15.00 ₩ doz...dis 10%
Providence Tool Co., Leg Irons, $25.00 ₩ doz....dis 10 %
Tower's.....dis 25 %
Daley's Improved Hand Cuffs: 2 Hands, Polished, ₩ doz, $48; Nickeled, $57; 3 Hands, Polished, ₩ doz. $72; Nickeled, $84.....dis 20 %

Handles.
Iron, Wrought or Cast.—
Door or Thumb.

Nos.	0	1	2	3	4
Per doz.	$0.90	1.00	1.18	1.35	1.50

....dis 60&10&10 %
Rogers's Latches.....₩ doz. 30¢ @ 35¢
Bronze Iron Drop Latches.....₩ doz. 70¢ net
Jap'd Store Door Handles—Nuts, $1.62; Plate, $1.10; no Plate, $0.88.....net
Barn Door.....₩ doz. $1.40, dis 10&10 %
Chest and Lifting.....dis 70 %
Handles, Wood—
Saw and Plane.....dis 40&10 @ 40&10&5 %
Hammer, Hatchet, Axe, Sledge, &c.....dis 35 %
Brad Awl.....₩ gross $2.00
Hickory Firmer Chisel, assorted.....₩ gross 4.50
Hickory Firmer Chisel, large.....₩ gross 5.00
Apple Firmer Chisel, assorted.....₩ gross 5.00
Apple Firmer Chisel, large.....₩ gross 6.00
Socket Firmer Chisel, assorted.....₩ gross 3.00
Socket Framing Chisel, assorted.....₩ gross 5.00
} dis 40 %
J. B. Smith Co.'s Pat. File.....dis 50 %
File, assorted.....₩ gross 2.75
Auger, assorted.....₩ gross 5.00
Auger, large.....₩ gross 7.00
} dis 40 @ 40&10 %
Patent Auger, Ives'.....dis 30&10 %
Patent Auger, Douglass'.....₩ set $1.25 net
Patent Auger, Swan's.....₩ set $1.00 net
Hoe, Rake, Shovel, &c.....dis 50&10 %
Cross Cut Saw Handles—
Atkins' No. 1 Loop, ₩ pair, 80¢ No. 3, 22¢: No. 2 and No. 4 Reversible, 22¢.
Boynton's Loop Saw Handles.....50¢, dis 60 %
Champion.....15¢

Hangers.
Barn Door, old patterns.....dis 60&10&10 @ 70 %
Barn Door, New England.....dis 60&10&10 @ 70 %
Samson Steel Anti-Friction.....dis 55 %
Orleans Steel.....dis 55 %
Hamilton Wrought Wood Track.....dis 55 %
U. S. Wood Track.....dis 65 %
Champion.....dis 60&10 %
Rider and Wooster, Medina Mfg. Co.'s list.....dis 70 %
Climax Anti-Friction.....dis 55 %
Climax Steel Anti-Friction.....dis 50 %
Zenith for Wood Track.....dis 55 %
Reed's Steel Arm.....dis 40 %
Challenge, Barn Door.....dis 50 %
Sterling Improved (Anti-Friction).....dis 65&10 %
Victor, No. 1, $15; No. 2, $16.50; No. 3, $18...dis 50&2 %
Cheritree.....dis 50&5 %
Kidder's.....dis 50&10 @ 60 %
The "Boss".....dis 60 %

Best Anti-Friction.....dis 60 %
Duplex (Wood Track).....dis 60 %
Terry's Patent. .....₱ doz. pr., 3¼ in. $10; 5 in.. $12.....dis 50 @ 50&5 %
Cronk's Patent....No. 4, $12; No. 5, $14.40; No. 6, $18 ; .....dis 50&10 @ 50&10 %
Wood Track Iron Clad..₱ ft. 10¢, dis 50&10 @ 50&10 %
Carrier Anti-Friction .....dis 50&10%
Architect.....₱ set $6.00, dis 20 %
Eclipse.....dis 20&10
Felix.....₱ set $4.50, dis 20 %
Richards'.....dis30@30&10 %
Lane's Steel Anti-Friction.....dis 40&10 %
The Ball Bearing Door Hanger....dis 20&10 @ 25&10 %
Warner's Patent.....dis 20@20&10 %
Stearns' Anti-Friction .....dis 20 @ 20&10 %
Stearns' Challenge. .....dis 25&10 @ 25&10&10 %
Faultless.....dis 40 @ 40&5 %
American.....₱ set $6 ; dis 20&10 %
Rider & Wooster, No. 1, 62½¢, No. 2, 75¢.....dis 40 %
Paragon, Nos. 1, 2 and 3.....dis 40&10 %
Paragon, Nos. 5, 5½, 7 and 8.....dis 20&10 %
Crescent.....dis 60@60&10 %
Nickel. Cast Iron.....dis 50 %
Nickel, Malleable Iron and Steel.....dis 40 %

Harness Snaps.—See Snaps.

Hatchets.—List Jan. 1, 1886.

Isaiah Blood.....dis 35 @ 40%
Hunt's Shingling Lath and Claw.....dis 40&5 %
Hunt's Broad.....dis 40 %
Buffalo Hammer Co.....dis 40&10@50 %
Hurd's.....dis 40&5 @ 40&10&5 %
Yerkes & Plumb.....40&5 @ 40&10 %
Wm. Mann, Jr., & Co.....dis 50 @ 50&5%
Underhill Edge Tool Co .....dis 40&5 @ 40&10 %
Underhill's Haines and Bright goods.....dis 33⅓ %
C. Hammond & Son.....dis 40&10 @ 50 %
Simmons.....dis 35 @ 40 %
Peck's.....dis 40&10 @ 40&10&5 %
Kelly's.....dis 50@50&5 %
Sargent & Co.....dis 50 %
Ten Eyck Edge Tool Co.....dis 40&10@40&10&5 %
Collins, following list.....dis 10 %

Shingling, Nos. 1 2 3.....	₱ doz	$5.50	$6.00	$6.50
Claw, Nos. 1 2 3.....	₱ doz	6.00	6.50	7.00
Lathing Nos. 1 2 3..	₱ doz	5.50	6.00	6.50

Hay Knives.

Lightning.....Mfrs. price ₱ doz $18 dis 25 % ; Jobber's Extras
Electric.....₱ doz $17 ; dis 30 @ ₱ doz $18 } 30&5%
Gem'.....
Wadsworth's.....dis 40&7½ @ 40&10 %
Carter's Needle.....₱ doz $11.50 @ $12.00
Heath's.....₱ doz $13.50 @ $14.00

Hinges.

Wrought Iron Hinges—
Strap and T.....dis 70&10 %
Screw Hook and Strap. { 8, 10, 12 in., ₱ D..... 3½¢ ; { 14 to 36 in. ₱ D..... 2½¢
Heavy Welded Hook { 8 to 12 in., ₱ D..... 3½¢ ; { 14 in. & up. ₱ D..... 2½¢
Screw Hook and Eye..... { ¼ in.... ₱ doz $1.50 ; { ⅜ in.... ₱ doz $2.45 ; { ½ in.... ₱ doz $3.80 } 10%
Rolled Blind Hinges, Nos 32 and 34.....dis 50&10 %
Rolled Blind Hinges, Nos. 232 and 234.....dis 55&10 %
Rolled Plate.....dis 70&10 %
Rolled Raised.....dis 70&10
Plate Hinges { 8, 10 & 12 in., ₱ D..... ; "Providence" } over 12 in., ₱ D.....

Spring Hinges—
Geer's Spring and Blank Butts.....dis 40 %
Union Spring Hinge Co.'s list, March. 1886....dis 20 %
Acme and U. S .....dis 30 %
Empire and Crown.....dis 20 %
Hero and Monarch .....dis 50 %
American, Gem, and Star, Japanned.....dis 20 %
American, Gem, and Star, Bronzed.....net
Oxford, Bronze and Brass.....net
Barker's Double Acting.....dis 30&10 %
Union Mfg. Co.....dis 25 %
Bommer's.....dis 30 %
Buckman's.....dis 15@20 %
Chicago.....dis 30 %

Gate Hinges—
Western.....₱ doz $4.40, dis 55 %
N. E.....₱ doz $7.00, dis 55 %
N. E. Reversible.....₱ doz $5.20, dis 55&10 %
Clark's, Nos. 1 2 3.....dis 60&10 @ 60&10&5 %
N. Y. State.....₱ doz $5.00, dis 55&10 %
Automatic.....₱ doz $12.50, dis 50 %
Common Sense.....₱ doz pair $4.50, dis 50 %
Seymour's.....dis 45&10 %
Shepard's, Nos. 1, 2, 10 and 20.dis 60&10@60&10&10 %
Shepard's, No. 3.....dis 60&10@60&10&10 %
Reed's Latch and Hinges.....₱ doz sets $12, dis 50 %

Blind Hinges—
Parker.....dis 75&2 %
Palmer.....dis 50&5&10 %
Seymour.....dis 70&2 %
Nicholson.....dis 45&10 %
Huffer.....dis 50 %
Clark's, Nos. 1, 3, 5, 40 and 50.....dis 75&10&2&80 %
Clark's Mortise Gravity.....dis 50 %
Sargent's, Nos. 1, 3, 5, 11, 13...dis 75&10@75&10&5 %
Sargent's, No. 12.....dis 75&10&10 %
Reading's Gravity .....dis 75&10 @ 75&10&5 %
Shepard's "Noiseless." Nos. 50, 60, 65 & 55.....dis 75&10&5 %
Shepard's Niagara Gravity, Nos. 1, 3 and 5....dis 80 %
Shepard's Buffalo Gravity, Nos. 1, 3 and 5.....dis 80&2½ %
Shepard's Champion Gravity No. 75.....dis 80&10&5 %
Shepard's Steamboat Gravity, No. 10.....dis 80&20 %
Shepard's Acme Lull & Porter.....dis 75&5@75&10 %
Shepard's O. S. Lull & Porter.....dis 75&10 %
Shepard's "Queen City" Reversible.....dis 70&10 %
Clark's Lull & Porter, Nos. 0, 1, 1¼, 2, 2½, 3.....dis 75&10&2½ %
North's Automatic Blind Fixtures, No. 2, for Wood, $10.50; No. 3, for Brick, $13.50....dis 25&2 %

Hoes.

Handled—
Garden, Mortar, &c.....dis 65&5 %
Planter's, Cotton, &c.....dis 65&5 %
Warren Hoe.....dis 60 %
Magic.....₱ dos $4.21

Eye—
D. & H. Scovil.....dis 15 %
Lane's Crescent Scovil Pattern.....dis 45 %
Lane's Crescent Planters Pattern.....dis 45 & 5 %
Lane's Razor Blade, Scovil Pattern.....dis 30 %
Maynard. S. & O. Pat.....dis 45&5 %
Sandusky Tool Co., " " .....dis 60 %
Hubbard & Co., " " .....dis 60 %
Bare " " .....dis 60 %
Grub.....dis 60 @ 60&10 %

Hog Rings and Ringers.

Hill's Improved Ringers.....₱ doz. $5.50 @ 5.75
Hill's Old Style Ringers.....₱ doz. $3.00 @ 3.25
Hill's Tongs.....₱ doz. $5.50 @ 6.00
Hill's Rings.....₱ doz boxes, $2.00 @ 2.25
Perfect Rings.....₱ doz boxes $1.75 @ 2.00
Perfect Ringers.....₱ doz $2.50
Blair's Hog Ringers.....₱ doz, $2.60 @ $2.65
Blair's Hog Rings, ...₱ doz 90¢ @ $1.00
Champion Ringers.....₱ doz $2.00
Champion Rings, Double.....₱ doz, $2.25
Brown's Ringers.....₱ doz, $2.00
Brown's Rings.....₱ doz, $1.25 @ 1.30

Hoisting Apparatus.

"Moore's" Hand Hoist, with Lock Brake.....dis 15 %
"Moore's" Differential Pulley Block.....dis 20 %

Holders, Tool.

Balz Pat.....₱ doz $4 ; dis 25 %

Hollow-Ware.

Iron—
Stove Hollow-Ware, Ground..dis 60&10@60&10&10 %
Stove Hollow-Ware, Unground dis 70&10@70&10&5 %
Enameled and Tinned Hollow-Ware—
Kettles.....dis 70&10 %
Oval Boilers, Saucepans & Glue Pots.....dis 40&10 @ 50 %
Gray Enameled Ware.....dis 40 @ 40&5 %
Agate and Granite Ware.....dis 25 %
Rustless Hollow-Ware.....dis 50 @ 50&5 %
Galvanized Tea-Kettles—

Inch.....	6	7	8	9
Each.....	55¢	60¢	65¢	75¢

Silver Plated—
Reed & Barton.....dis 40&5 %
Meriden Brittania Co.....dis 40&5 %
Simpson, Hall, Miller & Co.....dis 40&5 %
Rogers & Brother.....dis 40&5 %
Hartford Silver Plate Co.....dis 40&5&5 %
William Rogers Mfg. Co.....dis 40&5&5 %

Hooks.

Cast Iron—
Bird Cage. Sargent's list.....dis 60&10&10%
Bird Cage, Reading.....dis 60&10&10 %
Clothes Line, Sargent's list .....dis 60&10&10 %
Clothes Line, Reading list. dis 60&10 @ 60&10&10 %
Ceiling, Sargent's list.....dis55&10&10 %
Harness, Reading list.....dis 55&10 @ 55&10&10 %
Coat and Hat, Sargent's list.....dis 55&10 %
Coat and Hat, Reading... ...dis 50&10 @ 50&10&10 %

Wrought Iron—
Cotton.....₱ dos $1.22
Cotton Pat. (N. Y. Mallet & Handle W'ks).....dis 30 %
Tassel and Picture (T. & S. Mfg. Co.).....dis 50 %
Wrought Staples, Hooks, &c.....See Wrought Goods
Bench Hooks.....See Bench Stops

Wire—
Wire Coat and Hat, Gem, list April, 1886.....dis 45 %
Wire Coat and Hat. Miles', list April, 1886.....dis 45
Indestructible Coat and Hat.....dis. 45 %
Belt.....dis 75&10 @ 80 %
Grass.....₱ dos $2.00
Rush.....dis 55 @ 60 %
Whiffletree—Patent.....dis 55 %
Hooks and Eyes—Malleable Iron.....dis 70 %
Hooks and Eyes—Brass.....dis 60&10&10 %
Fish Hooks, American.....dis 50 %

Horse Nails.

Nos.	6	7	8	9	10	
Ausable.....	28¢	26¢	25¢	24¢	23¢.	dis 25&10@25&10&10 %
Clinton. Fin.	24¢	22¢	21¢	20¢	19¢	.....dis 40&10 @ 50 %
Essex.....	28¢	26¢	25¢	24¢	23¢.	dis 25&10@25&10&10
Putnam.....	24¢	22¢	21¢	20¢	19¢	.....dis 5&10&2½&2½ %
Vulcan.....	23¢	21¢	20¢	19¢	18¢.	..... dis 12½&5
Northwest'n.	25¢	23¢	22¢	21¢	20¢	.....dis 10&10&5&5 %
Globe.....	23¢	21¢	20¢	19¢	18¢.	.....dis 12½&5&2½ %
A. C.....	25¢	23¢	22¢	21¢	20¢.	dis 25&10 @ 25&10&5 %
C. B.-K.....	25¢	23¢	22¢	21¢	20¢.	....dis 25&10 @ 25&10&5 %
Champlain...	28¢	26¢	25¢	24¢	23¢	.....dis25&10&10&5 %
New Haven..	28¢	26¢	25¢	24¢	23¢	dis25&10@25&10&10 %
Saranac.....	28¢	21¢	20¢	19¢	18¢.	.....dis 30&10 %
Champion....	25¢	23¢	23¢	21¢	20¢.	.....dis 10&10&10 %
Capewell.....	28¢	26¢	25¢	24¢	23¢.	...dis 35&5 @ 35&10 %
Star.....	23¢	21¢	20¢	19¢	18¢.	dis 10&10@10&10½ %
Anchor.....	23¢	21¢	20¢	19¢	18¢.	.....dis 30&5 %

Western.....10¢ per lb., all sizes
Empire Bronzed .....14¢ per lb.

Horse Shoes.—See Shoes, Horse.

Hose, Rubber, competition.....75&10 @ 80 %

Standard.....dis 70&70&10 %
Extra.....dis 60@10&10 %
N. Y. B. & P. Co., Para.....dis 30&10 %
N. Y. B. & P. Co., Extra.....dis 50&5 %
N. Y. B. & P. Co., Dundee.....dis 60&10&10 %

Ice Picks, Chisels, &c.

Am. Ice Chisel Pol'd.....₱ doz $3.00, dis 2@20&5 %
National Ice Chisel.....₱ doz $6.25, dis 20 %
Novelty Ice Breakers.....₱ doz $6.25, dis 20 %
Dunlap's Ring Picks.....₱ doz $2.00, dis 15 %
Wood Head Picks, Sargent's....₱ doz $1.60, dis 50&10 %
Iron Head Picks, Sargent's.....₱ doz $1.25, dis 50&10 %
Ice Mallets, Pick in handle.....₱ doz $2.00, dis 15 %
Ice Axes, Small Cast or Mail...₱ doz $1.25, dis 20&10 %
Combination Ice Tools.....₱ doz $2.00 net
Acme Ice Pick and Tongs...₱ gross $55.00, dis 50&10 %
Roger's Lightning Ice Chisel .....₱ gross $28.50

Ice Tongs.

Champion, S. S. & Co..... ....₱ doz $4.00, dis 25&10 %
Family.....₱ doz $2.75, dis 20@25 %

Jack Screws.—See Screws.

Kettles.

Brass, 7 to 17 in., ₱ D.....	Spun. 24¢	Stamped. 32¢
Brass larger than 17 inches, ₱ D...	28¢	24¢

Enameled and Tea Kettles.....See *Hollow-Ware*

Keys.

Lock Asso'n list Dec. 30. 1886.....dis 50&10 @ 60&5 %
Eagle, Cabinet, Trunk and Padlock.....dis 33⅓&2 %
Hotchkiss' Brass Blanks.....dis 40 %
Hotchkiss' Copper and Tinned ....dis 40 %
Hotchkiss' Padlock and Cabinet.....dis 35 %
Ratchet Bed Keys.....₱ dos $4.00, dis 15 %

Knife Sharpeners.

Parkin's Applewood Handles.....₱ doz $6.00, dis 40 %
Parkin's Rosewood or Cocobolo...₱ doz $9.00, dis 40 %

Knives.

Wilson's Butcher Knives.....dis 20 @ 25 %
Ames' Butcher Knives.....dis 25 %
Nichols' Butcher Knives.....dis 40&10
Ames' Shoe Knives.....dis 20@25 %
Ames' Bread Knives.....₱ doz $1.50, dis 15 @ 20 %
Moran's Shoe and Bread Knives.....dis 20 %
Hay and Straw.....See Hay Knives
Table and Pocket.....See Cutlery

Knobs.

Door Mineral.....65@70¢
Door Por. Jap'd.....75@80¢
Door Por. Por. Nickel .....$2.00 @ 2.25
Door Por. Plated, Nickel.....$2.00 @ 2.25
Drawer, Porcelain .....dis 55&10&10@6.&10&10 %
Hemacite Door Knobs, new list.....dis 40&10@50 %
Yale & Towne Wood Knobs, list Dec., 1885 ....dis 40 %
Furniture Plain.....75¢ gross inch. dis 10 %
Furniture, Wood Screws. .....dis 25&10 %
Base, Rubber Tip.....dis 70&10&5 %
Picture, Judd's.....dis 60&10&10 @ 70 %
Picture, Sargent's.....dis 66⅔&10 %
Picture, Hemacite.....dis 35&5 %
Shutter, Porcelain.....dis 65&10 %
Carriage, Japanned .....₱ gross 80¢, dis 60&10 %

Ladles.

Melting, Sargent's..... ... .dis 55&10
Melting, Reading.....dis 35&10%
Melting, Monroe's Patent. ....₱ dos. $4.00, dis 40%
Melting, P. S. & W..... .....dis 35&10 @ 40%
Melting, Warner's.. ....dis 30%

Lanterns.

Tubular, No. 9, without Guards..... ..₱ doz $5.75
Tubular, Liftwire, No.0, without Guards ₱ doz $8.50
Tubular, Hinge Tip No. 0. without Guards, ₱ doz $6.25
Tubular, Bottom Lift, without Guards ..₱ doz $6.25
Tubular, U. S. Safety Lift Wire, no Guards. ₱ doz $5.00
Guards for Tubulars, add ₱ doz.....
Police, Small, $6.00; Med. $7.25; Large, $9.75. dis 20@25%
Porter's Tin R. R.....$10 dis20 %

Lemon Squeezers.

Porcelain Lined, No. 1.....₱ doz. $6.00, dis 25&30 %
Wood, No. 2.....₱ doz. $3.00, dis 35 %
Wood, Common.....₱ doz $1.70 @ 1.75
Dunlap's Improved.....₱ dos. $3.75, dis 20 %
Sammis'.....No. 1, $5 ; 2, $9 ; 12, $18 ₱ doz. dis 25&10 %
Jennings' "Star".....₱ doz $2.50
The "Boss".....₱ doz $2.50
Dean's.....Nos. 1, ₱ doz $6.50; 2, $3.35; 3, $1.90
Little Giant.....dis 50 @ 50&5 %
King.....dis 40&5 %

Lines.

Cotton and Linen Fish, Draper's.....dis 50 %
Draper's Chalk.....dis 60 %
Draper's Mason's Linen, 84 ft., No. 1, $1.25 ; No. 2, $1.75 ; No. 3, $2.25 ; No. 4, $2.75 ; No. 5, $3.25..dis 25 %
Cotton Chalk.....dis 55 %
Samson, Cotton, No. 4, $2; No. 4½, $2.50.....dis 10 %
Silver Lake, Braided, Nos. 0, $6.00 ; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ₱ gross.....dis 25 %
Masons' Linen, No. 3½, $1.50 ; No. 4, $2 ; No. 4½, $2.50
Masons' Colored Cotton.....dis 45
Wire Clotnes, No. 18, $3.75 ; No 19, $3.25 ; No. 20, $2.75.
Ventilator Cord, Crimson Braided, White or Drab Cotton.....$7.50 ₱ doz. dis 20

Locks, Padlocks, Cabinet Locks, &c.

Door Locks, Latches, &c.—
List, Dec. 30, '86, chgd Feb. 2, '87...dis 50&10 @ 60&5 %
Note.—Lower net prices often made.
Reading Hardware Co. (list Feb. 2, '88).dis 55@60&10 %
Livingston & Co.....dis 70 %
Perkins' Burglar Proof.....dis 60&25 %
Plate.....dis 33⅓&2 %
F. Many's "Extension Cylinder" .....$10.50 ₱ doz
Barnes Mfg. Co.....dis 40 %
Yale Corrugated Key.....dis 33⅓ %
Dietz Flat Key.....dis 30 %
L. & C. Round Key Latches.....dis 30&10 %
L. & C. Flat Key Latches.....dis 33⅓&10 %
Romer's Night Latches.....dis 20 %
Yale new list.....dis 33⅓
"Shepardson" or "U. S."..... dis 35
'Felter" or "American".....dis 40&10
Seed's N. Y. Hasp Lock.....dis 25

Cabinet—
Eagle, Gaylord Parker and Corbin, } List March, '84, revised Jan. 1, '85. dis 33⅓&2 %
Deits, Nos. 36 to 39.....dis 40 %
Deits, Nos. 51 to 63.....dis 40 &10 %
Dietz, Nos. 86 to 96.....dis 30 %
Stoddard Lock Co.....dis 30 @ 33⅓ %
"Champion" Night Latches.....dis 40 %
Barnes Mfg. Co.....dis 40 %
Eagle and Corbin Trunk.....dis 25&2 %
Champion" Cabinet and Combination....dis 33⅓ %
Yale.....dis 33⅓ %
Romer's.....dis 25 %

Padlocks—
List, Dec. 23, 84.....dis 65&10&2&—%
Yale Lock Mfg. Co.'s.....dis 33⅓ %
Eagle.....dis 25&2 %
Eureka, Eagle Lock Co.....dis 40&2 %
Romer's, Nos. 0 to 91.....dis 35 %
Romer's, Nos. 200 to 505.....dis 20 %
A. E. Dietz.....dis 40 %
"Champion" Padlocks.....dis 40 %
Hotchkiss.....dis 30 %
"Star".....dis 45 %
"Horse Shoe." ₱ doz.. $9.....dis 40 %
Barnes Mfg. Co.....dis 40 %
Nock's.....dis 30 %
Brown's Patent.....dis 25 %
Scandinavian.....dis90 %
Fraim's Pat. Scandinavian new list (low)....dis 60 %

Lumber Tools.

Ring Peavies, "Blue Line" Finish.....₱ doz $20.00
Ring Peaves, Common Finish..... .....₱ doz $18.00
Steel Socket Peavies.....₱ doz $21.00
Mall. Iron Socket Peavies.....₱ doz $19.00
Cant Hooks, "Blue Line" Finish.....₱ doz $16.00
Cant Hooks, Common Finish.....₱ doz $14.00
Cant Hooks, Mall. Socket Clasp, "Blue Line" Finish.....₱ doz $16.00
Cant Hooks, Mall. Socket Clasp Common Finish.....₱ doz $14.50
Cant Hooks, Clip Clasp, "Blue Line" Fin. ₱ doz $14.00
Cant Hooks, Clip Clasp, Common Finish..₱ doz $12.00
Hand Spikes.....₱ doz 6 ft., $15.00 ; 8 ft., $20
Pike Poles, Pike & Hook, 12 ft. 14 ft. 16 ft. 18 ft. 20 ft. ₱ doz.....$11.50 12.50 14.50 17.50 21.50
Pike Poles, Pike only, ₱ doz..... 10.00 11.00 13.00 16.00 20.00
Pike Poles, not ironed, ₱ doz..... 6.00 7.00 9.00 12.00 16.0
Setting Poles, ₱ doz..... 14.00 15.00 17.00 .....
Swamp Hooks.....₱ doz $18.00
Landing Blocks.....₱ doz $22.50
Skidding Tongs.....₱ doz $51.00
Log Binders.....₱ doz $26.00
Bended Boot Calks, 1 to 5 M, dis 25 % ; 5 to 10 M, dis 30 %
Square Steel Boot Calks.....dis 40 %
Chain Rafting Dogs.....₱ 100 $12.50
Ring Rafting Dogs...₱ 100, med., $10.00 ; large, $12.00
Timber Grapples.....₱ dos $30.00

Lustre.

Four-ounce Bottles.....₱ doz. $1.75 ₱ gro. $17. 00

Mallets.

Hickory..... .....dis 20&10@20&10&10 %
Lignumvitæ..... .....dis 20&10@20&10&10 %
B. & L. Block Co., Hickory and L. V...dis 30 @ 30&10 %

Mattocks.—Regular list.....dis 60&5 @ 60&10 %

Meat Cutters

Dixon's—Nos.....	1	2	3	4	
₱ doz.....	$14.00	17.00	19.00	30.00	—dis 45 %

Woodruff's.....	Nos.	100	150	
	₱ doz.	$15.00	18.00	—dis 45 %

Champion.....	Nos.	200	300	400	
	₱ dos.	$22.00	27.00	40.00	—dis 45 %

Hales' Pattern Nos.	11	12	13	
₱ dos...	$27.00	33.00	45.00	dis 70 @ & 5 %

American.....dis

Nos.....	1	2	3	4B	5	6
Each.....	$5.00	7.00	10.00	25.00	50.00	60.00

Enterprise.....dis 3

Nos.....	10	12	22	32	42
Each.....	$3 00	2.50	4.00	6.00	15

Pennsylvania.....dis 40&10%
Nos.....1 2 3 00
₩ doz.....$24.00 28.00 36.00 28 00
Wiles' Challenge..Nos. 1 2
₩ doz..$22.00 30.00 40.00—dis 45&45&10 %
Home No. 1.....$26 ₩ doz, dis 55&10 %
Draw Cut..Nos.. 6 2 6 8
Each....$50.00 75.00 80.00 225.00—dis 20 @ 25 %
Beef Shavers (Enterprise Mfg. Co.)....dis 20&10 @ 30 %
Chadborn's Smoked Beef Cutter.....₩ doz. $60.00

Mincing Knives.
Am. (2d quality), ₩ gro, 1 blade, $7; 2 blades, $12; 3 blades, $18.....net
Lothrop's.....dis 20&10 %
Smith's. ₩ doz, Single, $2.00; Double, $3....dis 40&45 %
Snapp & Cowles.....dis 50&10&60 %
Buffalo Adjustable.....₩ doz $3.00, dis 25 %

Molasses Gates.—Stebbins' Pat..dis 70@70 & 7½ %
Stebbins' Genuine.....dis 60&10&10 %
Stebbins' Tinned Ends.....dis 40&10 %
Chase's Hard Metal.....dis 50&10 %
Bush's.....dis 20 %
Lincoln's Pattern.....dis 66⅔&10 %
Weed's.....dis 20&10 %
Ross Nos.. 1 2 3 4
$7.00 8.00 9.00 10.00. ₩ doz. dis 60&10&10 %

Money Drawers.—₩ doz., $18 @ $20.

Muzzles.—Safety, ₩ doz. $3.....dis 25 %

Nails.....See Trade Report
Wire Nails, list July 14, '87.....dis 70 & 70&10 %
Wire Nails, Standard Penny.....₩ keg, $2.75 @ $2.85

Nail Puller.—Curtiss Hammer. ₩ doz $9.00 net
Giant, No. 1.....₩ doz $30.00, dis 10 %
Pelican.....₩ doz $9.00, dis 25 %
Boss.....₩ doz $30, dis 30 %

Nail Sets.—Square.....₩ gro., $4.00 @ $4.25
Round.....₩ gro., $3.25
Cannon's Diamond Point.....₩ gro. $12 dis 20 %

Nut Crackers.
Cable (Humason & Beckley Mfg. Co.).....dis 40 %
Blake's Pattern.....₩ doz $2.00, dis 10 %
Turner & Seymour Mfg. Co.....dis 50 %

Nuts and Washers.
Size.....¼ 5 16 ⅜ ½ ⅝ ¾ 1
Washers.....7 5⅛ 4¼ 4 3⅛ 3¼ 3½
Nuts all kinds, 5¢ off list.
In lots less than 100 ℔, ₩ ℔, add ½¢, 1 ℔ boxes add 1¢ to list.

Oakum.
Government.....₩ ℔ 8½¢
U. S. Navy.....₩ ℔ 7½¢
Navy.....₩ ℔ 7 ¢

Oilers.—Zinc and Tin.....dis 65 @ 65&10 %
Brass and Copper.....dis 50&10@50&10&5 %
Malleable, Hammers' Improved, No 1, $3.60; No. 2, $4.00; No. 3, $4.40 ₩ doz.....dis 10 @ 10&10 %
Malleable, Hammers, Old Pattern, same list....dis 40 %
Prior's Patent or "Paragon" Zinc.....dis 60&10&10 %
Prior's Patent or "Paragon" Brass.....dis 50 %
Olmstead's Tin and Zinc.....dis 60 %
Olmstead's Brass and Copper.....dis 50 %
Broughton's Zinc.....dis 60 %
Broughton's Brass.....dis 50 %

Packing, Steam.

Rubber—
Standard.....dis 60&10 @ 60&10&10 %
Extra.....dis 50&10 @ 60 %
N. Y. R. & P. Co., Standard.....dis 50&10&5 %
N. Y. R. & P. Co., Empire.....dis 70 %
N. Y. R. & P. Co., Salamander.....₩ ℔ 65¢, dis 30 %
Jenkins' Standard.....₩ ℔ 80¢, dis 35 %

Miscellaneous—
American Packing.....10¢ @ 11¢ ₩ ℔
Russia Packing.....14¢ ₩ ℔
Italian Packing.....13 @ 14¢ ₩ ℔
Cotton Packing.....15 @ 17¢ ₩ ℔
Jute.....7 @ 8¢ ₩ ℔

Padlocks.—See Locks.

Pails.
Galvanized Iron—
Quarts.....10 12 14
Hill's Light Weight, ₩ doz.....$2.75 3.00 3.25
Hill's Heavy Weight, ₩ doz.....3.00 3.25 3.75
Whiting's.....2.75 3.00 3.25
Sidney Shepard & Co.....2.67 .... 3.23
Iron Clad.....2.75 3.00 3.25
Fire Buckets.....2.75 3.25 3.50
Buckets, see Well Buckets

Indurated Fibre Ware—
Star Pails, 12 qt.....₩ doz $4.50
Fire, Stable and Milk, 14 qt.....₩ doz $5.50

Pencils. Faber's Carpenters'.....high list, dis 50 %
Faber's Round Gilt.....₩ gro $5.25 net
Dixon's Lead.....₩ gro $4.50 net
Dixon's Lumber.....₩ gro $6.75 net
Dixon's Carpenters'.....dis 40&10 %

Picks.
Railroad, 5 to 6, $12.00; 6 to 7, $13.....dis 60 @ 60&10 %
Adze Eye, 5 to 6, $12.00; 6 to 7, $13.....dis 60 @ 60&10 %

Picture Nails.
Brass Head, Sargent's list.....dis 50&10&10 %
Brass Head, Combination list.....dis 50&10 %
Porcelain Head, Sargent's list.....dis 50&10&10 %
Porcelain Head, Combination list.....dis 40&10 %
Niles' Patent.....dis 40 %

Pinking Irons.....₩ doz 65¢ net

Pipe, Wrought Iron.—List March 23, 1887.
1¼ and under, Plain.....dis 52½ %
1¼ and under, Galvanized.....dis 42½ %
1½ and over, Plain.....dis 65 %
1½ and over, Galvanized.....dis 52½ %
Boiler Tubes, Iron.....dis 55 %

Planes and Plane Irons.
Wood Planes—
Molding.....dis 50 @ 50&5 %
Bench, First Quality.....dis 60 @ 60&5 %
Bench, Second Quality.....dis 60&10 %
Bailey's (Stanley R. & L. Co.).....dis 30&10 %
Iron Planes—
Bailey's (Stanley R. & L. Co.)...dis 30&10@30&10&5 %
Miscellaneous Planes (Stanley R. & L. Co.)..dis 20&10 %
Victor Planes (Stanley R. & L. Co.)....dis 20&10 %
Steer's Iron Planes.....dis 35 @ 35&5 %
Meriden Mal. Iron Co.'s.....dis 30&10@30&10&10 %
Davis's Iron Planes.....dis 30&10@30&10&10 %
Birmingham Plane Co.....dis 50@50&5 %
Gage Tool Co.'s Self-Setting.....dis 20 %
Plane Irons—
Plane Irons.....dis 20&10 %
Plane Irons, Butcher's.....$5.00 @ $5.25 to 2
Plane Irons, Buck Bros.....dis 30 %
Plane Irons, Middlesex Mfg. Co., "Baldwin Iron," Single and Cut.....dis 20 @ 25 %
Double.....dis 33⅓ @ 40 %
L. & L. J. White.....dis 25 %

Pliers and Nippers.
Button's Patent.....dis 30&10 @ 40 %
Hall's Pat. Compound Lever Cutting Nippers, No. 2, 5 in., $13.50; No. 4, 7 in., $21.00 ₩ doz dis 20&10@33⅓ %
Humason & Beckley Mfg. Co.....dis 50@50&10 %
Gas Pliers.....dis 60 %
Gas Pliers, Custer's Nickel Plated.....dis 60&5 %
Eureka Pliers and Nippers.....dis 40 %
Russell's Parallel.....dis 25 %
P. S. & W. Cast Steel.....dis 50 %
P. S. & W. Tinners' Cutting Nippers....add 6 % dis 10 %
Carew's Pat. Wire Cutters.....dis 20 %
Morrill's Parallel, per doz., $12.....dis 30&5 %
Cronk's 8 in., $15; 10 in., $21.....dis 40 %

Plumbs and Levels.
Regular List.....dis 70&10@70&10&10 %
Disston's.....dis 45&10 %
Pocket Levels.....dis 70&10@70&10&10 %
Davis Iron Levels.....dis 30 %
Davis' Inclinometers.....dis 10&10 %

Poppers, Corn.
Round or Square, 1 qt.....₩ gro $10.50 @ $12
Round or Square, 2 qt.....₩ gro $23.50 @ $24

Post Hole and Tree Augers and Diggers.
Samson Post Hole Digger....₩ doz $36.00, dis 25&10 %
Fletcher Post Hole Augers....₩ doz $36.00, dis 20 %
Eureka Diggers.....₩ doz $16 @ $17
Leed's.....₩ doz $8.00 @ $9.00
Vaughan's Post Hole, Auger, per doz, $24.00... dis 40 %
Kohler's Little Giant.....₩ doz $18.00
Kohler's Hercules.....₩ doz $16.00
Kohler's New Champion.....₩ doz $9.00
Schneidler.....₩ doz $18
Kyan's Post Hole Digger.....₩ doz $24
Cronk's Post Bars.....doz $60, dis 50&5 @ 50&10 %
Gibb's Post Hole Digger, ₩ doz $30....dis 40 @ 40&10 %

Potato Parers.
White Mountain.....₩ doz $5.00 @ 5.50
Antrim Combination.....₩ doz $8.00
Hoosier.....₩ doz $13.50

Pruning Hooks and Shears.
Disston's Combined Pruning Hook and Saw, ₩ doz $18.00.....dis 20&10 %
Disston's Pruning Hook.....₩ doz $12.00, dis 20&10 %
E. S. Lee & Co.'s Prunin Tools.....dis 40 %
Pruning Shears, Henry Pat...₩ doz $5.75 @ $4.00 net
Henry's Pruning Shears.....₩ doz $4.25 @ $4.50 net
Wheeler, M. & Co.'s Combination...₩ doz $12, dis 20 %
Dunlap's Saw and Chisel.....₩ doz $8.50, dis 30 %
J. Mallinson & Co.....No. 1, $5.25; No. 2, $7.25

Pulleys.—Hot House, Awning, &c.....dis 60&10 %
Japanned Screw.....dis 60&10 %
Brass Screw.....dis 60&10 %
Japanned Side.....dis 66⅔&10 %
Japanned Clothes Line.....dis 60&10 %
Empire Sash Pulley.....dis 55 @ 60 %

Hay Fork, Solid Eye, $4.00; Swivel, $4.50 } dis 50&10 @ 50&10&5 %

Hay Fork, "Anti-Friction," 5 in. Solid, $5.70...dis 50 %
Hay Fork, "F" Common and Pat. Bushed.....dis 20 %
Hay Fork, Tarbox Pat. Iron.....dis 20 %
Hay Fork, Reed's Self-Lubricating.....dis 60 %
Spade Back.....dis 45 %
Tackle Blocks.....See Blocks

Pumps.—Cistern, Best Makers.....dis 50 @ 10&60 %
Pitcher Spout, Best Makers...dis 60&10 @ 60&10&10 %
Pitcher Spout, Cheaper Goods..dis 70&5 @ 70&10&5 %

Punches.
Saddlers' or Drive, good quality.....₩ doz 60¢ @ 65¢
Bemis & Call Co.'s Cast Steel Drive.....dis 50&5 %
Bemis & Call Co.'s Springfield Socket.....dis 60&5 %
Spring, good quality.....₩ doz $2.50 @ $2.60
Spring, Leach's Patent.....dis 15 %
Bemis & Call Co.'s Spring and Check.....dis 40 %
Solid Tinners'.....₩ doz $1.44, dis 55 %
Tinners' Hollow Punches.....dis 20&2 %

Rail.
Sliding Door, Wrt. Brass ₩ ℔ 35¢, dis 20@20&5 %
Sliding Door, Bronzed Wrt. Iron.....₩ foot 7¢
Sliding Door Iron, Painted....₩ foot 4¢, dis 20&10&5 %

Barn Door, Light.... Inch.	¾	⅝	½
Per 100 feet.....	$2.50	3.00	4.40—dis 10 %

S. D. for N. E. Hangers—

	Small.	Med.	Large
Per 100 feet.....	$2.15	2.70	3.25 net

Terry's Wrought iron, ₩ foot.....4¾¢ @ 5¢
Victor Track Rail 7¢ ₩ foot.....dis 50&2 %
Carrier Steel Rail, per foot.....4½¢

Rakes.
Cast Steel.....dis 65&5 @ 70 %
Malleable.....dis 70 @ 70&5 %
Gibbs Lawn Rake.....$12, dis 40 %
Canton Lawn Rake.....$9, dis 40 %
Ft. Madison Prize Bow Brace and Peerless..dis 65&5 %
Fort Madison Steel Tooth Lawn Rake, $6.....dis 25 %

Razors.—J. R. Torrey Razor Co.....dis 20%
Wostenholme and Butcher.....$10 to £, dis 10 %

Razor Strops.
Genuine Emerson.....dis 60 @ 60&5 %
Imitation Emerson.....₩ doz $2.00, dis 20&10&5 %
Torrer's.....dis 20 %
Badger's Belt and Combination.....₩ doz $2
Lamont Combination.....₩ doz $4

Rivets and Burrs.
Copper.....dis 50, with Jobbers' Extras.
Iron, list November 17, 1887.....dis 50 %

Rivet Sets.....dis 50&2 @ 50&10 %

Rods.—Stair, brass.....dis 2o&2 %
Stair, Black Walnut.....₩ doz 40¢

Rollers.
Barn Door, Sargent's list.....dis 60&10&10 %
Acme (Anti-Friction).....dis 55 %
Union Barn Door Roller.....dis 70 %

Rope.—Manufacturers' prices for large lots.

Manila	⅝ inch and larger	₩ ℔ 10½¢ net
Manila	½ inch	₩ ℔ 11½¢ net
Manila	⅜ and 5-16 inch	₩ ℔ 11½¢ net
Manila Tarred Rope		₩ ℔ 10 ¢ net
Manila, Hay Rope		₩ ℔ 10½¢ net
Sisal	⅝ inch and larger	₩ ℔ 9½¢ net
Sisal	½ inch	₩ ℔ 10½¢ net
Sisal	⅜ and 5-16 inch	₩ ℔ 10½¢ net
Sisal, Hay Rope		₩ ℔ 9½¢ net
Sisal, Tarred Rope		₩ ℔ 9½¢ net
Sisal, Medium Lath Yarn		₩ ℔ 8½¢ net

for cash in 10 days. Dis 1½ %

Cotton Rope.....₩ ℔ 15 @ 18¢ net
Jute Rope.....₩ ℔ 7¢

Rules.
Boxwood.....dis 80&10 @ 80&10&10 %
Ivory.....dis 50 @ 55&10 %

Sad Irons.
From 4 to 10, at factory.....₩ 100 ₩ $2.75 @ $2.85
Self-Heating.....₩ doz. $9.00 net
Self-Heating, Tailors'.....₩ doz. $18.00 net
Gleason's Shield and Toilet.....dis 25 %
Mrs. Pott's Irons.....dis 40@40&5 %
Enterprise Star Irons, new list, July 20, 1882....dis 40 %
Combined Fluter and Sad Iron...₩ doz. $15.00, dis 15 %
Fox Reversible, Self-Fluter.....₩ doz., $24.00 net
Chinese Laundry (N. E. Butt Co.).....5½¢, dis 15 %
New England.....5¢, dis 15 %
Mahony's Troy Pol. Irons.....dis 25 %

Sand and Emery Paper and Cloth.
List April 19, 1886.....dis 20@20&5 %
Sibley's Emery and Crocus Cloth.....dis 30 %

Sash Cord.
Common.....₩ ℔, 10¢ @ 11¢
Patent, good quality.....₩ ℔, 13¢ @ 13½¢
White Cotton Braided, fair quality.....₩ ℔ 28¢ @ 29¢
Common Russia Sash.....₩ ℔ 13½¢
Patent " " .....₩ ℔ 15¢
Cable Laid Italian " .....₩ ℔ 22¢ @ 23¢
India Cable Laid " .....₩ ℔ 13¢
Silver Lake, A Quality, White.....50¢, dis 10&10&5 %
Silver Lake, A Quality, Drab.....55¢, dis 10&10&5 %
Silver Lake, B Quality, White.....50¢, dis 20&10&5 %
Silver Lake, B Quality Drab.....50¢, dis 20&10&5 %
Silver Lake, C Quality, White (only).....37¢ @ 38¢
Sylvan Spring, Extra Braided, White.....34¢
Sylvan Spring, Extra Braided, Drab.....30¢
Semper Idem, Braided, White.....30¢
Egyptian, India Hemp, Braided.....25¢
Samson, Braided, White Cotton....50¢ dis 30 @ 30&5 %
Samson, Braided, Drab Cotton....55¢ dis 30 @ 30&5 %
Samson, Braided Italian Hemp....55¢ dis 30 @ 30&5 %
Samson Braided Linen.....80¢ dis 30 @ 30&5 %

Sash Locks.
Clark's No. 1, $10.00; No. 2, $8.00 ₩ gross.....dis 33⅓ %
Ferguson's.....dis 33⅓ %
Morris and Triumph, list Aug. 16, 1886.....dis 60&2 %
Victor.....60&10&2 %
Walker's.....dis 10 %
Attwell Mfg. Co.....dis 25 @ 33⅓ %
Reading.....dis 66⅔&10 @ 66⅔&10&10 %
Hammond's Window Springs.....dis 40 %
Common Sense, Jap d. Cop'd and Br'zed..₩ gross $4.00
Common Sense, Nickel Plated.....₩ gross $10.00
Universal.....dis 30 %
Kempshall's Strength.....dis 60 %
Kempshall's Model.....dis 60@60&10 %
Corbin's Daisy, list February 15, 1886.....dis 70 %
Payson's Perfect.....dis 60 @ 60&10 %
Hugunin's New and Improved Adjustable Sash Balances, list Jan. 5, 1887.....dis 25&5&2 %
Hugunin's New Sash Locks, list Jan. 5, '87..dis 25&5&2 %
Stoddard "Practical".....dis 10 %
Ives Patent.....dis 60 %
Lieseche's Nos. 100 & 110 ₩ gro. $8; 105, $10..dis 20&10 %
Davis, Bronze, Barnes Mfg. Co.....dis 50 %
Champion Safety, List March 1, 1888....dis 55@55&5 %

Sash Weights.
Solid Eyes.....₩ ton. $35

Sausage Stuffers or Fillers.
Miles' "Challenge".....₩ doz. $20, dis 50@50&5 %
Perry.....₩ doz. No. 1, $15; No. 0, $21, dis 50@50&5 %
Draw Cut No. 4.....each, $30.00, dis 20 %
Enterprise Mfg. Co.....dis 20&10 @ 30 %
Silver's.....dis 40&10 %

Saws.
Disston's Circular.. dis 45@45&5 %
Disston's Cross Cuts..dis 45@45&5 %
Disston's Hand.....dis 25@25&5 %
} Extras some-times given by jobbers.

Atkins' Circular.....dis 50 %
Atkins' Silver Steel Diamond X Cuts.....₩ foot 75 ¢
Atkins' Concave Tooth Dexter X Cuts.....₩ foot 55 ¢
Atkins' Special Steel Diamond X Cuts.....₩ foot 32 ¢
Atkins' Champion and Electric Tooth X Cuts.....₩ foot 30 ¢
Atkins' Hollow Back X Cuts.....₩ foot 21 @ 22¢
Atkins' Shingle, Mulay, Drag, &c.....dis 45 %
W. M. & C., Hand.....dis 30&5 @ 30&10 %
W. M. & C. Champion X Cuts, Regular ₩ foot .24¢@26¢
W. M. & C. X Cuts, Thin Back.....₩ foot 27¢ @29¢
Peace Circular and Mill.....dis 45&10 %
Peace Hand Panel and Rip....dis 20&10 @ 20&10&10 %
Peace Cross Cuts, Standard.....₩ foot 25¢
Peace Cross Cuts, Thin Back.....₩ foot 27¢@28¢
Richardson's Circular and Mill.....dis 45 @ 45&10 %
Richardson's X-Cuts, No. 1, 30¢; No. 2, 27¢; No. 3, 24¢

Jigsaws—
Griffin's Hack Saws, complete.....dis 40&10 @ 50 %
Griffin's Hack Saw, Blades only.....dis 40&10 @ 50 %
Star Hack Saws and Blades.....dis 25 %
Diamond Hack Saws and Blades.....dis 25 %
Eureka and Crescent.....dis 25 %

Saw Frames.
White Vermont.....₩ gro $9 @ $10
Red, Polished, and Varnished....₩ doz $1.50, dis 25 %

Saw Sets.
Stillman's Genuine....₩ doz $5.00 and $7.75, dis 40&5 %
Stillman's Imita..₩ doz $5.25 and $5.25, dis 40&5@40&10%
Common Lever.....₩ doz $2.00, dis 40&5 %
Morrill's No. 1, $15.00; Nos. 3 & 4, $24....dis 40&10@50%
Leach's.....No. 0, $8.00; No. 1, $15.00, dis 15 @ 20 %
Nash's.....dis 20&10 @ 20&10&10 %
Hammer, Hotchkiss.....$5.50, dis 10 %
Hammer, Bemis & Call Co.'s new Patent....dis 30&5 %
Bemis & Call Co.'s Lever and Spring Hammer..dis 30&5 %
Bemis & Call Co.'s Plate.....dis 10 %
Bemis & Call Co.'s Cross Cut.....dis 12½ %
Aiken's Genuine.....$13.00, dis 50&10 %
Aiken's Imitation.....$7.00, dis 50&5 %
Hart's Patent Lever.....dis 20 %
Duston's, Star, $9. No. 15, $5.50, dis 20&10@20&10&10 %
Atkins' Lever.....per doz No. 1, $5.00; No. 2, $9.60
Atkins' Criterion.....per doz $7.00 @ $7.50
Croissant, Keller), No. 1, $15.00; No. 2, $24.00, dis 33⅓&10 %

Saw Tools.
Atkins Perfection.. $15.00; Excelsior $6.00 ₩ doz.

Scales.
Hatch, Counter. No. 171, good quality.....₩ doz $31
Hatch, Tea. No. 161.....₩ doz $6.75 @ $7.00
Union Platform, Plain.....$2.30 @ 2.35
Union Platform, Striped.....$2.40 @ 2.50
Chatillon's Grocers' Trip Scales.....dis 50 %
Chatillon's Eureka.....dis 25 %
Chatillon's Favorite.....dis 40 %
Family, Turnbull's.....dis 30&10&10 %

Scale Beams.
Scale Beams, List of Jan. 12, 82..dis 50&10@50&10&5 %
Scale Beams, Custer.....dis 30@33⅓ %
Chatillon's No. 1.....dis 50 %
Chatillon's No. 2.....dis 50 %

Scrapers.
Adjustable Box Scraper (S. R. & L. Co.)..$6.50, dis 30&10 %
Box, 1 Handle.....₩ doz $4.00, dis 10 %
Box, 2 Handle.....₩ doz $6.00, dis 10 %
Defiance Box and Ship.....dis 20&10 %
Foot.....dis 50&10@60 %
Ship, Common.....₩ doz $3.50 net
Ship, Providence Tool Co.....dis 10 %

Screen Window and Door Frames.
Porter's Pat. Window and Door Frame...dis 33⅓&10 %
Screen Corner Irons. Warner's....dis 33⅓ @ 33⅓&10 %
Stearns' Frames and Corners.....dis 2o&10 %

Screw Drivers.
Douglas Mfg Co.....dis 20&10&10 %
Disston's.....dis 45&10 %
Disston's Patent Excelsior.....dis 45&10 %
Buck Bros.....dis 30 %
Stanley R. & L. Co.'s Varnished Handles....dis 65&10 %
Stanley R. & L. Co.'s Black Handles.....dis 60&10 %
Sargent & Co.'s No. 1 Forged Blade....dis 70 & 10&10 %
Sargent & Co.'s No. 20.....dis 66⅔&10&10 %
Sargent & Co.'s Nos. 40 & 30, Cast Steel....dis 60&10 %
Sargent & Co.'s No. 60, Round Blade.....dis 70&10 %
Knapp & Cowles' No. 1.....dis 60@20 @ 70 %
Knapp & Cowles' No. 1 Extra.....dis 60 @ 60&10 %
Knapp & Cowles No. 00 & 4....dis 50&5 @ 50&10 %
Stearns'.....dis 25&10&5 %
Gay & Parsons.....dis 35 %
Champion.....dis 25 %
Clark's Patent.....dis 30 @ 33⅓ %
Crawford's Adjustable.....dis 30 %
Eilrich's Socket and Ratchet.....dis 25 @ 25&10 %
Allard's Spiral, new list.....dis 25 %
Kolb's Common Sense.....₩ doz $6, dis 25&10 %

Syracuse Screw-Driver Bits.....dis 30 & 20&5 %
Screw Driver Bits.....₱ doz. 50¢ @ 75¢
Screw Driver Bits, Parr's.....₱ gro @ 25
Fray's Hol. Hdle. Sets, No. 3, $12.....dis. 25 @ 25 & 10 %
P. D & Co.'s, all Steel.....dis 50 %

Screws

Wood Screws—List, Brass, Jan 27; Iron July 1, 1887
Flat Head Iron.....dis 70 %
Round Head Iron.....dis 65 %
Flat Head Brass.....dis 65 %
Round Head Brass.....dis 60 %
Flat Head Bronze.....dis 65 %
Round Head Bronze.....dis 60 %
} Ex. 10 % often given by jobbers.

Machine—
Flat Head, Iron.....dis 55 .
Round Head, Iron.....dis 50 %
Bench and Hand—
Bench, Iron.....dis 55&10 @ 55&10&10 %
Bench, Wood, Beech.....₱ doz $2.25
Bench, Wood, Hickory.....dis 20&10 %
Hand, Wood.....dis 25&10 @ 25&10&5 %
Lag, Blunt Point.....dis 70 %
Coach and Lag, Gimlet Point.....dis 60%@60%&5 %
Bed.....dis 25&5 %
Hand Rail, Sargent's.....dis 66⅔&10 %
Hand Rail, Rumason, Beckley & Co.'s..dis 70&10@75 %
Hand Rail, Am. Screw Co.....dis 75 %
Jack Screws, Millers Falls list.....dis 50 @ 50&5 %
Jack Screws, P. S. & W.....dis 35 %
Jack Screws, Sargent.....dis 60&10 @ 60&10&5 %
Jack Screws, Stearns'.....dis 40 @ 40&10 %

Scroll Saws.

Lester, complete, $10.00.....dis 25 %
Rogers, complete, $4.00.....dis 25 %

Scythe Snaths.....dis 50&10 @ 60 %

Shears.

American (Cast) Iron.....dis 75&10 @ 75&10&5 %
Pruning.....See Pruning Hooks and Shears
Barnard's Lamp Trimmers.....₱ doz $3.75
Tinners'.....dis 20&2 %
Seymour's, List, Dec., 1881 dis 60&10&10@60&10&10&5 %
Heinsch's, List, Dec., 1881, dis 60&10&10@60&10&10&5 %
Heinsch's Tailor's Shears.....dis 33⅓ %
First quality C. S. Trimmers.....dis 80@80&10 %
Second quality C. S. Trimmers, dis 80&10@80&10&10 %
Acme Cast Shears.....dis 10&10 %
Diamond Cast Shears.....dis 10 %
Clipper.....dis 10&10 %
Victor Cast Shears.....dis 75&10@75&10&5 %
Howe Bros. & Hulbert, Solid Forged Steel..dis 40 %
Cleveland Machine Co., Solid Steel Forged.....dis 70 %

Sheaves.

Sliding Door—
M. W. & Co., list Jan. 1, 1887. ....dis 50&10 @ 60&5 %
R. & E., list Dec. 18, 1885.....dis 55&2 %
Corbin's list.....dis 60&10&2 %
Patent Roller.....dis 60&10&2 %
Patent Roller, Hatfield's.....dis 75 %
Russell's Anti-Friction, list Dec. 18, 1885..dis 60&2
Moore's Anti-Friction.....dis 60
Sliding Shutter—
R. & E. list Dec. 18, 1885.....dis 60&10&2 %
Sargent's list.....dis 60&10 %
Reading list.....dis 60&10&10 %

Ship Tools.

L. & I. J. White.....dis 20&5 %
Albertson Mfg. Co.....dis 25 %

Shoes, Horse, Mule, &c.

Horse—
Burden's, Perkins', Phœnix, at factory.....$4.00
Mule—Add $1 ₱ keg to above prices.
Ox, Wrought—
Ton lots.....₱ lb 9¢
1000 lb lots.....₱ lb 9½¢
500 lb lots.....₱ lb 10¢

Shot.—(*Eastern prices, 2¢ off, cash, 5 days.*)

Drop, ₱ bag, 25 lb.....$1.50
Drop, ₱ bag, 5 lb.....35
Buck and Chilled, ₱ 25-lb bag.....$1.75
Buck and Chilled; ₱ 5-lb bag.....40
(*Western prices, 2¢ off, cash, 5 days.*)
Drop Shot, ₱ bag, 25 lb
Drop Shot, ₱ bag, 5 lb.....
Buck and Chilled Snot, ₱ bag, 25 lb .....
Buck and Chilled Shot, ₱ bag, 5 lb.....
} See Trade Report.

Shovels and Spades.

Ames' Shovels, Spades, &c., list Nov. 1, 1885....dis 20 %
NOTE.—Jobbers frequently give 5 @ 7½ % extra on above.
Griffith's Black Iron.....dis 50&10 %
Griffith's C. S.....dis 60 @ 60&10 %
Griffith's Solid Cast Steel R. R. Goods.....dis 20 %
Old Colony (Sanford Fork & Tool Co).....dis 20 %
St. Louis Shovel Co.....dis 15 @ 15&7½ %
Hussey, Binns & Co.....dis 15 @ 25 %
Hubbard & Co.....dis 20@20&7½ %
Lehigh Mfg. Co.....dis 50&10 %
Payne Pettebone & Son, list January, 1886....dis 30 %
Remington's (Lowman's Patent).....dis 30&10 @ 40 %
Rowland's, Black Iron.....dis 50&10 %
Rowland's Steel.....dis 60&5 @ 60&10 %

Shovels and Tongs.

Iron Head.....dis 60&10@60&10&5 %
Brass Head.....dis 60@10&10 %

Skeins, Thimble.

Western list.....dis 75 @ 75&10 %
Columbus Wrt. Steel, list Nov. 1, 1887.....dis 20 %
Coldbrookdale Iron Co.....dis 50&10 %

Sieves.

Buffalo Metallic, S. S. & Co., new list.....dis 50&25 %
Barler Flour Sifters.....₱ doz $2.00
Smith's Adjustable Sifters.....₱ doz $2.25
Smith's Adjustable Milk Strainer.....₱ doz $2.00
Smith's Adjustable F. & C. Strainer.....₱ doz $1.75

Sieves, Wooden Rim—	Iron.	Plated.
Mesh 18, Nested, ₱ doz.	70¢	90¢
Mesh 20, Nested, ₱ doz.	85¢	$1.00
Mesh 24, Nested, ₱ doz.	$1.00	1.10

Slates.—School, by case.....dis 0&10 %

Snaps, Harness, &c.

Anchor (T. & S. Mfg Co.).....dis 65 %
Fitch's (Bristol).....dis 50&10 %
Hotchkiss.....dis 10 %
Andrews.....dis 50 %
Sargent's Patent Guarded.....dis 70&10&10 %
German, new list.....dis 40&10 %
Covert.....dis 50&2 %
Covert, New Patent.....dis 50&5&2 %
Covert New R. E.....dis 60@2 %
Covered Spring.....dis 60&10&10 %

Soldering Irons.

Covert's Adjustable. list Jan. 1, 1886.....dis 35&2 %

Spoke Shaves.—Iron.....dis 45 %
Wood.....dis 30 %
Galley's (Stanley R. & L. Co.).....dis 40&10 %
Stearns'.....dis 20&10 @ 30 %

Spoke Trimmers.

Bonney's.....₱ doz $10.00, dis 50 %
Stearns'.....dis 20&10 %
Ives'.....No. 1, $16.00; No. 2, $12.00 ₱ doz, dis 55&10 %
Douglass'.....₱ doz $9.00, dis 20 %

Spoons and Forks.

Tinned Iron—
Basting, Central Stamping Co.'s list, dis 70@70&10 %
Solid Table and Tea, Central Stamping Company's list.....dis 70@70&10 %
Buffalo, S. S. & Co.....dis 33⅓@2 %

Silver-Plated—4 mos. or 5 % cash 30 days.
Meriden Brit. Co., Rogers.....dis 50 %
C. Rogers & Bros.....dis 50 %
Rogers & Bro.....50 %
Reed & Barton.....dis 50 %
Wm. Rogers Mfg. Co.....dis 50 @ 50&10 %
Simpson, Hall, Miller & Co.....dis 50 @ 50&10 %
Holmes & Edwards Silver Co.....dis 50 @ 50&10 %
H. & E. Silver Co., Mexican Silver.....dis 50&5 %
H. & E. Silver Co., Durham Silver.....dis 50&5 %
German Silver.....dis 50 @ 50&5 %
German Silver, Hall & Elton.....dis 40&5 %
Nickel Silver.....dis 50&5@50&10&5 %, cash
Britannia.....dis 55 %

Springs.

Elliptic, Concord, Platform and Half Scroll.....dis 60 @ 60&5 %
Cliff's Bolster Springs.....dis 25 %

Squares.

Steel and Iron.....
Nickel Plated.....
} dis 70&10 @ 75 %
Try Square and T Bevels.....dis 60&10&10 @ 70 %
Disston's Try Square and T Bevels.....dis 45&10 %
Winterbottom's Try and Miter.....dis 30&10 %

Staples.

Fence Staples, Galvanized.....₱ lb. 4¢
Fence Staples, Plain.....₱ lb. 3¢

Steelyards......dis 40&10&50&5 %

Stocks and Dies.

Blacksmith's, Waterford Goods ...dis 30&5 @ 30&10 %
Lightning Screw Plate.....dis 25 @ 30 %
Reece's New Screw Plates.....dis 33⅓ @ 33⅓&5 %

Stone.

Hindostan No. 1, 3¢; Axe, 3½¢; Slips No. 1, 5¢.
Sand Stone.....₱ lb, 2¢
Washita Stone, Extra.....₱ lb, 2 1 @ 22¢
Washita Stone, No. 1.....₱ lb, 15 @ 16¢
Washita Stone, No. 2.....₱ lb, 11 @ 12¢
Washita Slips, No. 1, Extra.....₱ lb, 40 @ 42¢
Washita Slips, No. 1.....₱ lb, 30 @ 32¢
Arkansas Stone, No. 1, 4 to 6 in.....₱ lb, $1.35
Arkansas Stone, No. 1, 6 to 9 in.....₱ lb, $1.75
Turkey Oil Stone.....4 to 8 in. ₱ lb. 40¢
Turkey Slips.....₱ lb, $1.00 @ $1.50
Lake Superior, Chase.....₱ lb, 16¢
Lake Superior Slips, Chase.....₱ lb, 31@32¢
Seneca Stone, Red Paper Brand, ₱ lb.....18 @ 20¢
Seneca Stone, High Rounds, ₱ lb.....20 @ 25¢
Seneca Stone, Small Wheels, ₱ gro.....$24.00

Stove Polish.

Joseph Dixon's.....₱ gro $6.00, dis 10 %
Gem.....₱ gro $4.50, dis 10 %
Gold Medal.....₱ gro $6.00, dis 25 %
"Mirror".....₱ gro $6.00, dis — %
Lustro.....₱ gro $4.75 net
Ruby.....₱ gro $3.75 net
Rising Sun, 5 gro. lots.....₱ gro $5.50
Dixon's Plumbago.....₱ lb 8¢ net
Boynton's Noon Day, ₱ gro.....$5.00
Parlor Pride Stove Enamel.....₱ gross, $13
Yates' Liquid, 2 3 5 10 gal. cans
₱ gal.. $0.90 .80 .70 .60
Yates Standard Paste Polish, 10-lb cans, per lb., 15 ¢
Jet Black.....₱ gro $3.50
Japanese.....₱ gro $3.50
Fireside.....₱ gro $2.50

Tacks, Brads, &c.
List, Jan 2, 1888.

American Iron Carpet Tacks.....dis 72½&10&2 %
Steel Carpet Tacks.....dis 72½&10&2 %
Swedes Iron Carpet Tacks.....dis 72½&10&2 %
American Iron Cut Tacks.....dis 70&10&2 %
Swedes Iron Tacks.....dis 67½&10&2 %
Swedes Iron Upholsterers' Tacks...dis 67½&10&2 %
Tinned Swedes Iron Tacks..dis 67½&10&2 %
Tin'd Sw'des Iron Uphol'ers' Tacks.dis 67½&10&2 %
Gimp and Lace Tacks.....dis 67½&10&2 %
Tinned Gimp and Lace Tacks.....dis 67½&10&2 %
Swedes Iron Trimmers' Tacks.....dis 67½&10&2 %
Swedes Iron Miners' Tacks.....dis 67½&10&2 %
Swedes Iron Bill Posters' or Railroad Tacks.....dis 67½&10&2 %
Swedes Steel Tacks, all kinds (Swedes Iron price list).....dis 72½&10&2 %
Copper Tacks.....dis 3 0&10&2 %
Copper Finishing Trunk and Clout Nails.....dis 33⅓&10&2 %
Finishing Nails.....dis 60&10&2 %
Trunk and Clout Nails.....dis 60&10&2 %
Tinned Trunk and Clout Nails.....dis 60&10&2 %
Basket Nails.....dis 60&10&2 %
Common and Patent Brads.....dis 60&10&2 %
Hungarian Nails.....dis 60&10&2 %
Chair Nails.....dis 60&10&2 %
Zinc Glaizers' Points.....dis 40&10&2 %
Cigar Box Nails.....dis 45&1 & 2 %
Picture-Frame Points.....dis 45&10&2 %
Looking-Glass Tacks.....dis 45&10&2 %
Leathered Carpet Tacks.....dis 45&10&2 %
Brush Tacks.....dis 45&10&2 %
Shoe Finders'.....List Jan. 2, 1888, dis 10 @ 10&5 %
Lining and Saddle Nails, List Jan. 1, 1886.
Silvered.....dis 30&10&10 %
Japanned.....dis 20&10&10 %
Double-pointed Tacks.....85 %
Wire Carpet Nails.....dis 50&10 %
Steel Wire Brads, R. & E. Mfg. Co.....dis 50&10 %

Extra 2% often given.

Tap Borers.

Common and Ring.....dis 20&10 %
Ives' Tap Borers.....dis 33⅓&5 %
Enterprise Mfg. Co.....dis 20&10 @ 30 %
Clark's.....dis 33⅓ @ 35 %

Tapes, Measuring.—American.....dis 25&10 %
Spring.....dis 40 %
Chesterman's.....Regular list dis 25 @ 30 %

Thermometers.—Tin Case.....dis 80 @ 80&10 %

Thimble Skeins.—See Skeins.

Ties, Bale.

Steel Wire, Standard Hat.....dis 50&10&5 %

Tinners' Shears, &c.

Shears and Snips (P. S. & W.).....dis 20 @ 25 %
Punches—See Punches.
Snips, J. Mallinson & Co.....dis 33⅓ %

Tinware.

Stamped, Japanned & Pieced, list Jan. 20, 1887.....dis 70 @ 70&10&5 %

Tobacco Cutters.

Enterprise Mfg. Co. (Champion).....dis 20&10 @ 40 %
Wood Bottom.....₱ doz $5.00 @ $5.25
All Iron.....₱ doz $4.25
Nashua Lock Co.'s.....₱ doz $18.00, dis 50 @ 55 %
Wilson's.....dis 55 %
Clipper (Sargent & Co.).....₱ doz $24, dis 50&10&10 %
Acme.....₱ doz $20.00, dis 40 %

Transom Lifters

Wollensak's Patent Iron Bronzed.....dis 50 %
Reiher's Bronzed Iron Rods list Jan. 1, 1887.dis 50&2 %
Reiher's Real Bronze or Nickel Plate, list Jan. 1, 1887.....dis 50&2 %
Excelsior.....dis 50&10&2 %
Shaw's.....dis 50&10
Payson's Universal.....dis 40 @ 40&10 %
Crown and Star.....dis 50 %

Traps.

Game—
Newhouse.....dis 35 @ 40&5 %
Oneida Pattern.....dis 60&10&10 @ 70 %
Game, Blake's Patent.....dis 40&10&5 %
Mouse and Rat—
Mouse, Wood Choker.....₱ doz holes 11@12¢
Mouse, Round Wire.....₱ doz $1.50, dis 10 %
Mouse, Cage, Wire.....₱ doz $2.50, dis 10 %
Mouse, Catch 'em alive.....₱ doz $2.50, dis 15
Mouse, "Bonanza".....₱ gross $10 net
Mouse, Delusion.....₱ gross $18.00, dis 15 %
Rat, "Decoy".....₱ gross $10.00, dis 10 %
Ideal.....₱ gross $1
Cyclone.....₱ gross $6.
Hotchkiss Metallic Mouse, 5 hole traps...₱ doz 90
In full cases.....₱ doz 75¢

Trowels

Lothrop's Brick and Plastering.....dis 25
Reed's Brick and Plastering.....dis 15 %
Diston's Brick and Plastering.....dis 25 @ 25&10 %
Peace's Plastering.....dis 25 %
Clement & Maynard's.....dis 20 %
Rose's Brick.....dis 15 @ 20 %
Brade's Brick.....dis 25 %
Worrall's Brick and Plastering.....dis 20
Garden.....dis 70 %

Triers.—Butter and Cheese.....dis 25 %

Trucks, Warehouse, &c.

B. & L. Block Co.'s list, 1882.....dis 40 %

Tubes, Boiler.—See Pipe

Twine.

	BC.	h
No. 9, Flax Twine, ¼ and ½ ₱ Balls	22¢	50¢
No. 12, " " ¼ and ½ "	21¢	20¢
No. 18, " " ¼ and ½ "	18¢	28¢
No. 24, " " ¼ and ½ "	18¢	28¢
No. 36, " " ¼ and ½ "	16¢	27¢
No. 264, Mattrass, ¼ and ½ "	48 @ 50	
Chalk Line, Cotton, ½ ₱ Balls		20¢
Mason Line, Linen, ½ "		55¢
2-Ply Hemp, ¼ and ½ ₱ Balls (Spring Twine)		11½¢
3-Ply Hemp, 1 ₱ Balls		12 @ 12½
3-Ply Hemp, 1½ ₱ Balls		11 @ 11½
Cotton Wrapping, 5 Balls to ₱		15¢ @ 16¢
2, 3, 4 and 5 Ply Jute, ½ ₱ Balls		10¢
Wool		6½¢ @ 7½¢
Paper		13¢ @ 14¢
Cotton Mops—6, 9, 12 and 15 ₱ to doz		18¢

Vises.
Solid Box.....dis 50&10&5 @ 60 %
Parallel—
Fisher & Norris Double Screw.....dis 15&10 %
Stephens'.....dis 25 %
Parker's.....dis 20 @ 25 %
Wilson's.....dis 55 %
Howard's.....dis 40 %
Bonney's.....dis 40%
Millers Falls.....dis 40 @ 40&10 %
Trenton.....dis 40&5 @ 40&10 %
Merrill's.....dis 15@20 %
Sargent's.....dis 60&10&10 %
Backus and Union.....dis 40 %
Double Screw Leg.....gro $3.75 net
Prentiss.....dis 15&10 %
Simpson's Adjustable.....dis 20&5 @ 25 %
Saw Filers—
Bonney's, Nos. 2 & 3.....₱ doz $15.00, dis 40 %
Stearn's.....dis 33⅓&10 @ 33⅓&10&10 %
Stearn's Silent Saw Vises.....dis 33⅓ @ 35 %
Sargent's.....dis 60&10&10 %
Hopkins'.....₱ doz $17.50, dis 10 %
Reading.....dis 40&10 %
Wentworth.....dis 20&10 %
Combination Hand Vise.....₱ gro, $42.00
Cowell Hand Vises.....dis 20 %
Bauer's Pipe Vises.....dis 10 %

Wagon Boxes.
Per lb.....2½¢

Washer Cutters.

Smith's Patent.....₱ doz $12.00, dis 20&10&10 %
Johnson's.....₱ doz $11.00, dis 33⅓ %
Penny's.....₱ doz Pol. $14; Jap'd, $16..dis 55 %
Appleton's.....₱ doz $16.00, dis 60&10 %
Bonney's.....dis 30&10 %

Washers.—See Nuts and Washers.

Wedges.—Iron.....₱ lb 3½¢
Steel.....₱ lb 4 ¢

Well Buckets, Galvanized.

Hill's.....₱ doz., 12 qt., $4.25; 14 qt., 15 2
Iron Clad.....₱ doz., 14 qt., $4.2 @ $4.50
Whiting's Flat Iron Band.....₱ doz $4.2 @ $4.50
Whiting's Wired Top.....₱ doz $4.0 @ $4.25

Well Wheels—8 in., $2; 10 in., $2.25; 12 in., $3.2

Wire.

Iron—
Market, Br. & Ann..Nos. 0 to 18.....dis 70&10@75 %
Market, Coppered, Nos. 0 to 18.....dis 70@70&10 %
Market, Galvanized, Nos. 0 to 18.....dis 65@65&10 %
Market Tin'd, Tinned list Nos. 0 to 18.dis 65@65&5 %
Stone Br. & Ann'd, Nos. 16 to 18...dis 72½@72½&5 %
Stone, Bright and Ann'd, Nos. 19 to 26..dis 75@75&5 %
Stone, Br. & Ann'd, Nos. 27 to 36.dis 75&10@75&10&5 %
Stone, Tin'd, Tin'd list, Nos. 18 to 36..dis 70@70&10
Tinned Broom Wire, Nos. 18 to 24.dis 72½@72½&5
Galvanized Fence.....dis 65@65&5 %
Annealed Fence, Nos. 8 & 9.....dis 70@70&5 %
Annealed Grape, Nos. 10 to 14.....dis 70@70&5 %
Brass and Copper, list, Jan. 18, '84.....dis 15 @ 20 %
Barb Fence.....See Trade Report
Wire on Spools.....dis
Malin's Steel and Tinned Wire on Spools.....dis 50 %
Malin's Brass and Copper Wire on Spools.....dis 40 %
Cast Steel Wire.....dis 00
Stubs' Steel Wire.....$6.00 to $, dis 30 %
Steel Music Wire, Nos. 12 to 30.....55¢ ₱ lb
Picture Wire.....dis 60&10 %
Barb Wire Safety Guards.....₱ 1000 $9.00, dis 2
Wire Clothes Lines. See Lines.

Wire Cloth, green, drab and black, ₱ 100 sq.
No. 34 Wire, $1.90; No. 33 Wire, $2.00

Wire Goods.—See Bright Wire Goods.

Wire Rope.—List May 1, 1886.....dis 33⅓

Wrenches.—American Adjustable.....dis 45 %
Baxter's Adjustable "S".....dis 35&10 %
Baxter's Diagonal.....dis 40 @ 40&10
Coes' Genuine.....dis 55&3 %
Coes' "Mechanics".....dis 55&10&3 %
Girard Standard.....dis 70&10 %
Lamson & Sessions' Engineers'.....dis 60&10 %
Lamson & Sessions' Standard.....dis 70&10 %
Coes' Pattern, Wrought
Girard Agricultural
Lamson & Sessions' Agricultural
Sterling Wrought.....dis 80 @ 80&5 %
Bemis & Call's Patent Combination.....dis 35 %
Bemis & Call's Merrick's Pattern.....dis 35 %
Bemis & Call's Brigg's Patte.....dis 25 %
Bemis & Call's Cylinder or Gas Pipe.....dis 40&5
Remis & Call's No. 3 Pipe.....dis 35&5 %
Aiken's Pocket (Bright).....$6.00, dis 50&10 %
The Favorite Pocket (Bright).....₱ doz $4.00, dis 40 %
Webster's Patent Combination.....dis 25 %
Boardman's.....dis 25@25&10 %
Always Ready.....dis 25&5 %
Alligator.....dis 50 %
Donohue's Engineer.....dis 25 %
Acme, Bright.....dis 60&3 %
Acme, Nickeled.....dis 50&3 %
Walker's.....dis 55&3 %
Diamond.....dis 40 %
Diamond Patent Steel.....dis 40 %

Wrought Goods.

Staples Hooks, &c., list Jan. 12, '87.dis 80&20@55&2 %

CURRENT METAL PRICES.

MARCH 21, 1888.

IRON AND STEEL.

Bar Iron from Store.

Common Iron :
¾ to 2 in. round and square.. } ₩ lb 2.10 @ 2.20¢
1 to 6 in. x ⅝ to 1 in..... }
Refined Iron :
¾ to 2 in. round and square.. }
1 to 4 in. x ⅜ to 1½ in..... } ₩ lb 2.25 @ 2.40¢
4½ to 6 in. x ⅝ to 1 in ..... }
1 to 6 in. x ¼ and 5-16 ..... ₩ lb 2.45 @ 2 60¢
Rods—⅝ and 11-16 round and sq..₩ lb 2.35 @ 2.50¢
Bands—1 to 6 x 3-16 to No. 12.....₩ lb 2 50 @ 2.60¢
"Burden Best" Iron, base price..₩ lb 3.00 @ ... ¢
Burden's "H. B. & S." Iron, base price..... ₩ lb 2 80 @ ....¢
"Ulster"..... ₩ lb 3.10 @ ....¢
Norway Rods ..... 4.00 @ 5.00¢

Merchant Steel from Store.

Per pound.
Open-Hearth and Bessemer Machinery, Toe Calk, Tire and Sleigh Shoe, base price in small lots..... 3¢ @ 3½¢
Best Cast Steel, base price in small lots. 9¢ @ 10¢
Best Cast Steel Machinery, base price in small lots..... 5½¢ @ 6¢

Extras on Merchant Steel.

For classification and extras adopted by the Merchant Steel Association of the United States January 11, 1888, see *The Iron Age*, Feb. 23, 1888.

Sheet Iron from Store.

	Common American.	R. G.	Cleaned.
10 to 16.....	₩ lb 2.75 @ 2.80¢	3.25 @	....¢
17 to 20	₩ lb 2.85 @ 3 00¢	3.25 @	3.50 ¢
21 to 24.....	₩ lb 3.00 @ 3.10¢	3.50 @	....¢
25 and 26....	₩ lb 3 20 @ ....¢	3.75 @	....¢
27.....	₩ lb 3.75 @ 3.37½¢	4.00 @	....¢
28.....	₩ lb 3.50 @ ....¢	4.00 @	....¢

	B. B.	2d qual.
Galvanized, 14 to 20....	₩ lb 4.80¢	4.50 ¢
Galvanized, 21 to 24.....	₩ lb 5.20¢	4.87½¢
Galvanized, 25 to 26.....	₩ lb 5.60¢	5.25 ¢
Galvanized, 27.....	₩ lb 6.00¢	5.62½¢
Galvanized 28	₩ lb 6.40¢	6.00 ¢
Patent Planished.....	₩ lb A 10¢	B, 9¢
Russia.....	₩ lb 9½¢ @ 10¢	
American Cold Rolled B. B.....	₩ lb 5¢ @ 7¢	

English Steel from Store.

Best Cast .... ₩ lb 14½ @ 15 ¢
Extra Cast ... ₩ lb 16½ @ 17 ¢
Swaged, Cast..... ₩ lb 16 ¢
Best Double Shear..... ₩ lb 15 ¢
Blister, 1st quality..... ₩ lb 12½¢
German Steel, Best..... ₩ lb 10 ¢
2d quality. ..... ₩ lb 9 ¢
3d quality ..... ₩ lb 8 ¢
Sheet Cast Steel, 1st quality..... ₩ lb 15 ¢
2d quality..... ₩ lb 14 ¢
3d quality..... ₩ lb 12½¢

METALS.

Tin.

Per lb
Banca, Pigs..... 38 @ 38½¢
Straits, Pigs..... 38 @ 38½¢
English, Pigs..... 37½¢
Straits in Bars..... 39 @ 40 ¢

Tin Plates.

Charcoal Plates.—Bright. Per box.

Melyn Grade.....	IC, 10 x 14.....	$6.50
" "	IC, 12 x 12.....	6.75
" "	IC, 14 x 20.....	6.50
" "	IC, 20 x 28.....	13.00
" "	IX, 10 x 14.....	8.00
" "	IX, 12 x 12.....	8.25
" "	IX, 14 x 20.....	8.00
" "	IX, 20 x 28.....	16.00
" "	DC, 12½ x 17.....	6.00
" "	DX, 12½ x 17.....	7.50
Calland Grade...	IC, 10 x 14.....	6.00
" "	IC, 12 x 12.....	6.25
" "	IC, 14 x 20.....	6.00
" "	IX, 10 x 14.....	7.50
" "	IX, 12 x 12.....	7.75
" "	IX, 14 x 20.....	7.50
Allaway Grade.....	IC, 10 x 14..... $5.25 @	5.50
" "	IC, 12 x 12..... 5.50 @	5.75
" "	IC, 14 x 20..... 5.25 @	5.50
" "	IC, 20 x 28..... 10.75 @	11.00
" "	IX. 10 x 14..... 6.25 @	6.50
" "	IX, 12 x 12 ..... 6.50 @	6.75
" "	IX, 14 x 20 ..... 6.25 @	6.50
" "	IX, 20 x 28	12.75
" "	DC, 12½ x 17..... 5.00 @	5.25
" "	DX, 12½ x 17..... 6.00 @	6.25

Coke Plates.—Bright.

Steel Coke.—IC, 10 x 14, 14 x 20	$4.90 @	$5.10
10 x 20.....	7.50 @	8.00
20 x 28.....	10.00 @	10.25
IX, 10 x 14, 14 x 20.....		6.00
BV Grade.—IC, 10 x 14, 14 x 20.	4.90 @	5.00

Charcoal Plates.—Terne.

Dean Grade.—IC, 14 x 20.....		$4 75
20 x 28.....	$9.25 @	9.50
IX, 14 x 20.....		5.75
20 x 28.....		11.50
Abecarne Grade.—IC, 14 x 20.....	$4.50 @	4.65
20 x 28.....	9.00 @	9 25
IX, 14 x 20.....	5.50 @	5.75
20 x 28.....		11.00

Tin Boiler Plates.

IXX, 14 x 20.....	112 sheets.	$12.50 @ $12 75
IXX, 14 x 28.....	112 sheets.....	12 75 @ 13 00
IXX, 14 x 31.....	112 sh ets	14.25 @ 14.50

Copper.

Duty: Pig, Bar and Ingot, 4¢; Old Copper, 3¢ ₩ lb. Manufactured (including all articles of which Copper is a component of chief value), 45 ℅ ad valorem.

Ingot.

Lake..... 17.25¢ @ 17.50¢
"Anchor" Brand. ..... 16.50¢ @ 17¢

Sheet and Bolt.

Prices adopted by the Association of Copper Manufacturers of the United States, December 10, 1887.

Not wider than	Not longer than	And longer than	Weights per square foot and prices per pound. Over 64 oz.	32 to 64 oz.	16 to 32 oz.	14 to 16 oz.	12 to 14 oz.	10 to 12 oz.	8 to 10 oz.	Less than 8 oz.
30	72		25	25	25	26	27	28	31	33
30		72	25	25	25	26	28	30	34	...
36	96		25	25	25	27	29	33	36	....
36		96	25	25	26	28	30	34	38	....
48	96		25	25	27	29	31	35	....	....
48		96	25	25	28	30	32	36	....	....
60	96		25	25	30	32	37	....	....	....
60		96	25	26	31	....	....	....	....	....
84	96		26	27	..	....	....	....	....	....
84		96	27	28	....	....	....	....	....	....
Over 84 in. wide			28	30	....	....	....	....	....	....

	16 oz.	14 oz.	12 oz.	10 oz.
All Bath Tub Sheets.....				
Per pound....	$0.28	0.30	0.32	0 35

Bolt Copper, ⅝ inch diameter and over, per pound..... 25¢
Circles, 60 inches in diameter and less, 3 cents per pound advance over lowest prices of Sheet Copper of the same thickness.
Circles over 60 inches diameter, up to 96 inches diameter, inclusive, 5 cents per pound advance over lowest prices of Sheet Copper of the same thickness.
Circles, over 96 inches diameter, 6 cents per pound advance over lowest prices of Sheet Copper of the same thickness.
Segment and Pattern Sheets, 3 cents per pound advance over price of sheets required to cut them from.
Cold or Hard Rolled Copper, 14 ounces per square foot and heavier, 1 cent per pound over the foregoing prices.
Cold or Hard Rolled Copper, lighter than 14 ounces per square foot, 2 cents per pound over the foregoing prices.

Copper Bottoms, Pits and Flats.

Per pound.
14 ounce to square foot and heavier..... 28¢
12 ounce and up to 14 ounce to square foot..... 29¢
10 ounce and up to 12 ounce..... 31¢
Circles less than 8 inches diameter 2 cents per pound additional.
Circles over 13 inches diameter are not classed as Copper Bottoms.

Tinning.

Tinning sheets on one side, 10, 12 and 14 x 48 each..... 8¢
Tinning sheets on one side, 30 x 60 each ..... 30¢
For tinning boiler sizes, 9 in (sheets 14 in. x 60 in.), each. ..... 15¢
For tinning boiler sizes, 8 in. (sheets 14 in. x 56 in.), each ..... 13¢
For tinning boiler sires, 7 in. (sheets 14 in. x 52 in.) each..... 12¢
Tinning sheets on one side, other sizes, per square foot..... 2½¢
For tinning both sides double the above prices.

Brass and Copper Tubes.

Seamless Copper.		Seamless Brass.	
⅜ inch ₩ lb.....	50¢	⅜ inch ₩ lb.....	47¢
½ " "	44¢	½ " "	41¢
⅝ " "	42¢	⅝ " "	39¢
¾ " "	40¢	¾ " "	37¢
⅞ " "	39¢	⅞ " "	36¢
1 " "	37¢	1 " "	34¢
1½ " "	34¢	1½ " "	31¢

Roll and Sheet Brass.

Discount from list..... .10 @ 15 ℅

Spelter.

Duty: Pig, Bars and Plates, $1.50 ₩ 100 lb.
Western Spelter..... 5¾ @ 6¢
" Bergenport"..... 8½¢
"Bertha"..... 7¾ @ 8¢

Zinc.

Duty; Sheet, 2½¢ ₩ lb.
600 lb casks..... 6¾¢
Per lb..... 7 @ 7½¢

Lead.

Duty: Pig, $2 ₩ 100 lb. Old Lead, 2¢ ₩ lb. Pipe and Sheets, 3¢ ₩ lb.
American..... @ 5½¢
Newark..... @ 5½¢
Bar..... 6¢
Pipe..... 7½¢, dis 20 ℅
Tin-Lined Pipe..... 15¢, dis 20 ℅
Block Tin Pipes..... 55¢, dis 20 ℅
Sheet..... 8½¢, dis 20 ℅

Solder.

½ @ ½ (Guaranteed)..... 23¢
Extra Wiping..... 30¢
The prices of the many other qualities of Solder in the market indicated by private brands vary according to composition.

Antimony.

Cookson..... ₩ lb 15¢
Hallett's..... " 12¢

FRENCH GLASS.

January 20, 1887—Per Box 50 feet.

	Sizes.	Single. 1st.	2d.	3d.	4th.
		E F H	I E H	H H	H B
25	6 x 8 to 10 x 15.....	$10.50	$9.00	$8.50	$8.00
40	11 x 14 to 16 x 24	11.50	10.75	10.25	9.75
50	18 x 22 to 20 x 30.....	15.50	14.00	13.00	12 50
54	15 x 36 to 24 x 30.....	16.50	15.00	13.50	.....
60	26 x 28 to 24 x 36.....	17.75	16.25	14.75	.....
70	26 x 36 to 26 x 44.....	19.00	17.50	15.25	.. ..
80	26 x 46 to 20 x 50.....	21.00	19.50	17.00	.....
90	30 x 56 to 34 x 56.....	23.00	21.25	19.00	.....
94	34 x 58 to 34 x 60.....	24.00	22.75	21.00	.....
100	36 x 60 to 40 x 60.....	26.50	24.50	23.00	.....

	Sizes.	Double. 1st.	2d	3d	4th
		E F H D	I E H D	H H D	H B D
25	6 x 8 to 10 x 15.....	$13.00	$12.50	$12 00	$11.50
40	11 x 14 to 16 x 24.....	16.00	15.00	14.50	....
50	18 x 22 to 20 x 30.....	20.50	19.50	18.50	...
54	15 x 36 to 64 x 30.....	22.00	20.75	19.50	..
60	26 x 28 to 24 x 36.....	25.00	23.00	21.50	....
70	26 x 36 to 26 x 44.....	26.00	25.00	23.00	....
80	26 x 46 to 20 50x	28.00	26.50	24.50	....
84	30 x 52 to 30 x 54.....	30.00	28.00	26.00	...
90	30 x 56 to 34 x 56.....	31.00	30.00	28.00	...
94	34 x 58 to 34 x 60.....	32.50	31.00	29.00	....
100	36 x 60 to 40 x 60.....	36.00	32.50	32.00	....

Sizes above—$15 per box extry for everp 5 inches
Discount—70 & 10 & 5 ℅.

AMERICAN GLASS.

Price Per Box of 50 Feet.

United Inches.	Sizes.	Single. AA	A	B	C
25	6 x 8 to 10 x 15..	$10.50	$9.00	$8.50	$8.00
40	11 x 14 to 16 x 24..	11.50	10.75	10.25	9.75
50	18 x 22 to 20 x 30..	15.50	14.00	13.00	12.50
54	15 x 36 to 24 x 30...	16.50	15.00	13.50	....
60	26 x 28 to 24 x 36...	17.75	16.25	14 75	...
70	26 x 36 to 26 x 44...	19.00	17.50	15.25	....
80	26 x 46 to 30 x 50...	21.00	19.50	17.00	....
84	30 x 52 to 30 x 54...	22.00	20.25	18.00	...
90	36 x 56 to 34 x 56...	23 0a	21.25	19.00	....
94	34 x 58 to 34 x 60...	24.00	22.75	21.00	....
100	36 x 60 to 40 x 60...	20.50	24.50	23.00	...

United Inches.	Sizes.	Double. AA	A	B	C
25	6 x 8 to 10 x 15...	$13.00	$12.50	11.00	$10.00
40	11 x 14 to 16 x 24...	16.00	15.00	13.50	12.00
50	18 x 22 to 20 x 30...	20.50	19.50	18.00	....
54	15 x 36 to 24 x 30...	22.00	20.75	18.75	....
60	26 x 28 to 24 x 36...	25.00	23.00	21.00	....
70	26 x 36 to 26 x 44...	26.00	25.00	22.50	....
80	26 x 46 to 30 x 50...	28.00	26.50	23.75	....
84	30 x 52 to 30 x 54...	30.00	28.00	25.25	....
90	30 x 56 to 34 x 56...	31.00	30.00	27.00	....
94	34 x 58 to 34 x 60...	32.50	31.00	28.00	....
100	36 x 60 to 40 x 60...	36.00	33.50	30.00	...

Sizes above—$10 per box extra for every 5 inches.
Discount—75 ℅ single strength; 75 & 5 ℅ double strength.

Paints.

Black, Lamp—Coach Painters'... ₩ lb 22 @ 24¢
" Ordinary..... 6¢
Black, Ivory Drop, fair..... 12 @ 15¢
" " best..... 20¢
Black Paint, in oil....kegs, 8¢; assorted cans, 11¢
Blue, Prussian, fair to best..... 40 @ 55¢
" " in oil..... 45 @ 55¢
" Chinese dry ..... 70¢
" Ultramarine..... 18 @ 30¢
Brown, Spanish..... 1½¢
" Van Dyke..... 10 @ 12¢
Dryers, Patent American..ass'd cans, 9¢; kegs, 7¢
Green, Chrome ..... 15 @ 23¢
Green, Chrome in oil..... 14 @ 18 @ 25¢
Green, Paris..... good, 20¢; best, 25¢
Green, Paris in oil ..... good, 30¢; best, 35¢
Iron Paint, Bright Red..... ₩ lb 2½¢
Iron Paint, Brown..... ₩ lb 1½¢
Iron Paint, Purple..... ₩ lb 3¢
Iron Paint, Ground in oil, Bright Red....₩ lb 6½¢
Iron Paint, Ground in oil, Red ..... ₩ lb 5½¢
Iron Paint, Ground in oil, Brown..... ₩ lb 5½¢
Iron Paint, Ground, Purple..... ₩ lb 6¢
Litharge..... 6½¢
Mineral Paints..... 2 @ 4¢
Orange Mineral ..... 10¢
Red Lead, American..... 6½¢
Red Venetian (Eng.) dry..... $1.65 @ $1.70
Red Venetian in oil.....ass't'd cans, 11¢; kegs, 8¢
Red Indian Dry..... 9 @ 12¢
Rose Pink..... 10 @ 13¢
Sienna, American Raw, powdered. .. .. 4¢
Sienna, Burnt, powdered..... 4½¢
Sienna, Burnt, in oil ..... 10 @ 16 @ 20¢
Sienna, Raw ..... 11 @ 15 @ 25¢
Umber, Burnt, powdered..... 4 @ 8¢
Umber, Burnt, in oil..... 9 @ 12 @ 15¢
Umber, Raw, powdered..... 4 @ 7½¢
Umber, Raw, in oil..... 9 @ 12 @ 15¢